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 ORIGINAL ARTICLE

Practical Algorithm for Acne Treatment Integrating Skincare and Energy-Based Devices

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ABSTRACT

Background: Energy-based devices (EBDs) are increasingly used to manage acne and its sequelae. While literature supports the use of appropriate skin care for acne, few studies address how to effectively integrate skincare with EBDs.

Methods: Six dermatologists from North America, participated in a live meeting to develop an acne treatment algorithm integrating skincare and EBDs. Six additional advisors contributed through a pre-meeting survey (along with 94 other physicians). The eleven dermatologists (authors) from Asia, Europe, Australia, and North America participated in algorithm development and manuscript review.

Results: The proposed algorithm describes how to integrate skin care with the use of EBDs in clinical practice.

Conclusions: This algorithm provides an approach for managing acne and best practices for integrating skin care with EBDs when treating acne and acne sequelae.

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INTRODUCTION

Despite the growing use of energy-based devices (EBDs) in dermatology, there remains a lack of structured guidance for clinicians on combining EBDs with skin care in acne and post-acne sequelae management. Pre- and post-procedural skin care is particularly relevant when EBDs are used, as appropriate skin care may enhance treatment efficacy, minimize side effects, and improve patient adherence, especially in patients with acne and subsequent sequelae.[1-5] This paper presents a practical algorithm to support clinicians who use EBDs in delivering patient-centered care by integrating appropriate skin care with EBDs for acne and acne sequelae.

MATERIALS AND METHODS

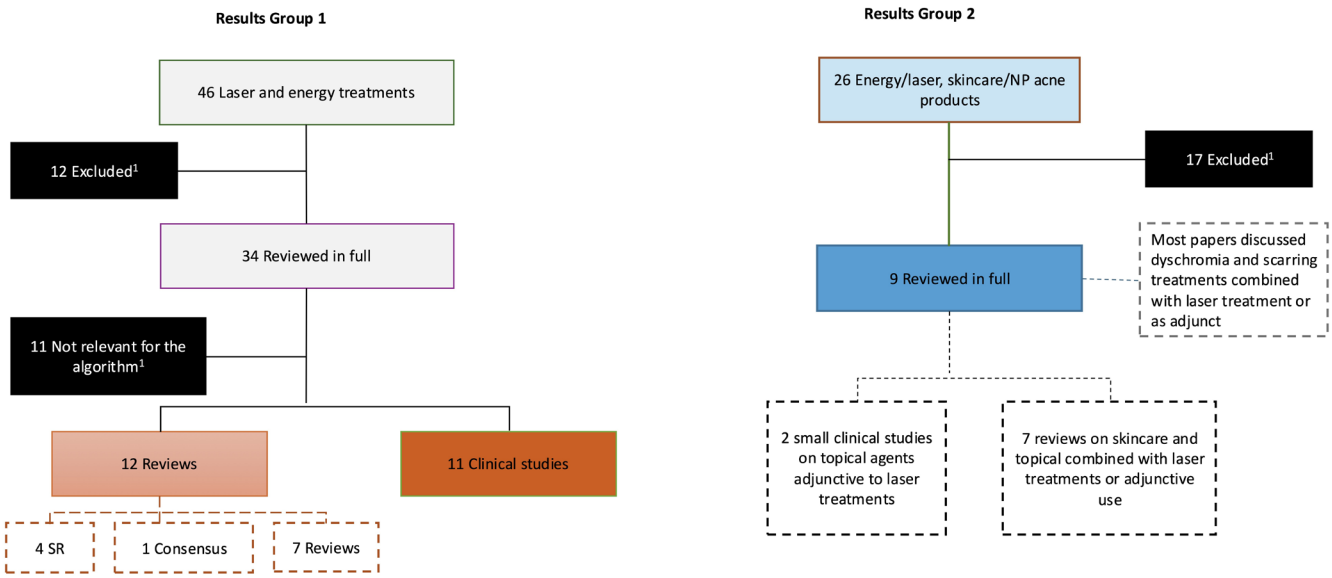
This project aimed to develop a practical algorithm to provide clinicians with skincare recommendations for acne treatment and maintenance with EBDs. This approach may prevent disease progression, treat acne-related sequelae, and improve patient outcomes.

Structured Literature Search

This project started with conducting a survey (N=100), selecting the expert panel, and conducting a structured literature review. The structured literature search looked for English-language studies, consensus papers, and other reviews of current best practices focusing on EBDs for acne treatment and maintenance with integrated skin care. Papers included were published between January 2010 to October 2024. Searches were limited to PubMed, with Google Scholar as a secondary source (Figure 1).

While published acne guidelines and algorithms provide information on prescription and non-prescription treatment, few acne guidelines include recommendations for EBDs.[6-8] The literature search found many publications on laser and light-based therapies for acne treatment but limited information on EBDs combined with skin care for acne patients.

FIGURE 1. Literature search results.



Clinical studies (CS); Randomized controlled trials (RCT); Retrospective studies (RS); Cross-sectional studies (CS); Systematic reviews (SR); Guidelines (GL); Meta-analysis (MA); Algorithm (Algo); Energy-based-devices (EBD)
[1]Excluded: Duplicates, not on EBDs, skin care, non-prescription acne products.
Due to a lack of clinical studies on EBDs and skin care, no grading was done.

The Panel

The panel comprised 12 advisors (authors). The advisors contributed virtually to the pre-meeting survey (along with additional physicians) for a total of 100 participants, and were actively involved in algorithm development and manuscript review. A draft algorithm was created based on the survey and literature search results.

Pre-Meeting Survey Results

This project incorporated a pre-meeting survey to assess physician behaviors regarding using EBDs in acne management and best practices for integrating skin care pre- and post-procedures.

Use of EBDs in Acne Management

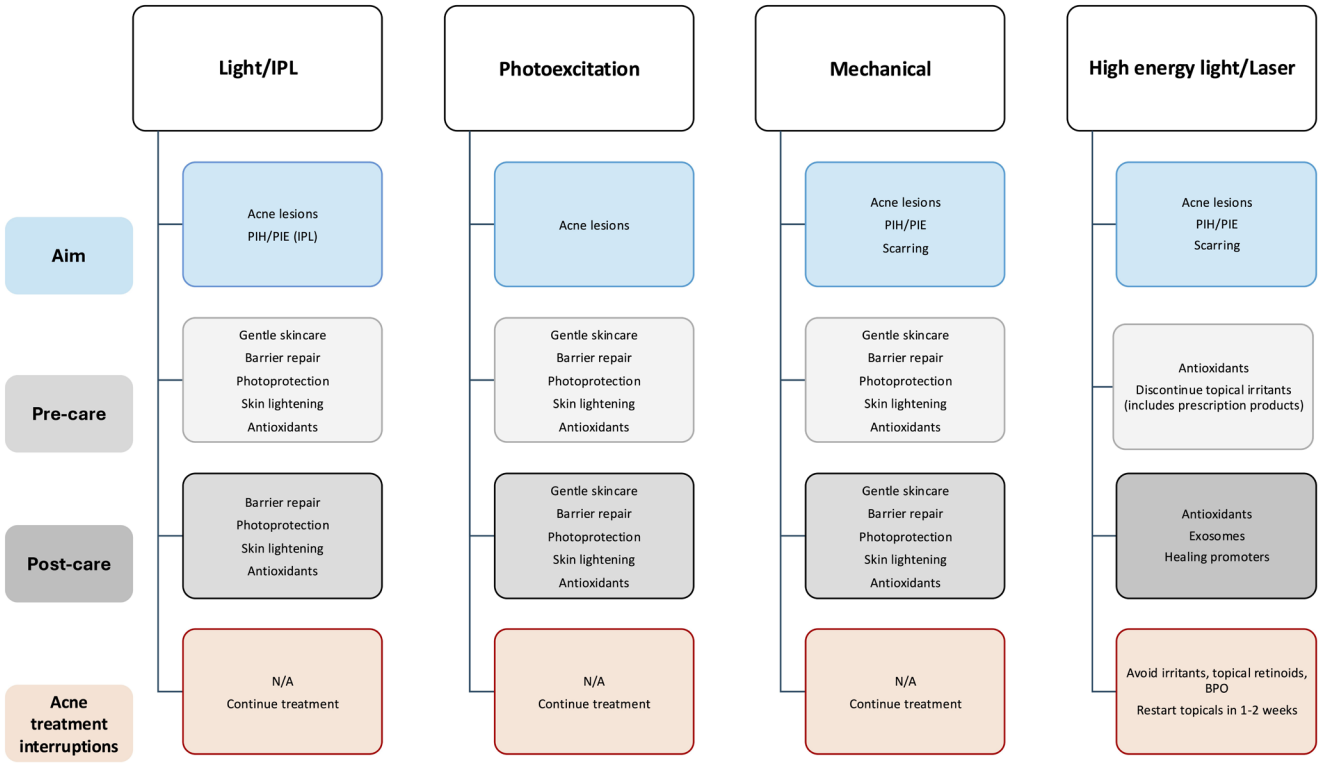
Pre-meeting survey results from advisors and the broader physician group support using EBDs to manage active acne and acne sequelae. Survey participants agreed that they most commonly recommend EBD treatment for patients with acne scars (88%), followed by patients who have acne-related dyschromia, such as PIH (78%), patients who have post-inflammatory erythema (PIE) from acne (78%), and patients with papules (43%), pustules (34%), and/or nodules (32%). Advisors rated the importance of EBDs and skincare treatment for patients with acne in clinical practice on a 5-point Likert scale (1 unimportant, 2 somewhat important, 3 neither unimportant or important, 4 important, 5 very important) as an average of 3.5.

TABLE 1.

Pre-Procedure and Post-Procedure Care Recommended by the Panel

Time of Care	Survey Question	Recommendation (% of advisors) N=100
Pre-procedure care	Most commonly recommended topical ingredients *pre-procedure* of applying an EBD to treat acne	Topical retinoids (51%) Topical antioxidants (42%) Topical BPO (42%)
	Most commonly recommended skincare products *pre-procedure* of applying an EBD to treat acne	Basic cleanser (79%) Moisturizer (53%)
Post-procedure care	Topical ingredients most commonly recommended *post-procedure* after using an EBD to treat acne	Topical antioxidants (55%) Retinoids (46%)
	Most commonly restricted topicals *post-procedure* when using an EBD to treat acne	Basic moisturizer (77%) Basic cleanser (72%)
	Most commonly restricted topicals *post-procedure* when using an EBD to treat acne	Topical retinoids (72%) Salicylic acid (62%) BPO (54%)

FIGURE 2. Energy-based devices and periprocedural skincare for treating active acne and acne sequelae.



IPL, intense pulsed light; PIE, post-inflammatory erythema; PIH, post-inflammatory hyperpigmentation; BPO, benzoyl peroxide.

Pre-Procedure and Post-Procedure Care

Advisors completed a pre-meeting survey describing their skincare recommendations for applying an EBD to treat acne both pre- and post-procedure (Table 1).

RESULTS

The Algorithm

The advisors agreed on an algorithm for integrating skin care with EBDs for acne treatment (Figure 2). This algorithm is limited to treating acne and its sequelae; it does not address the treatment of melasma.

Integrative Approach for Treating Active Acne and Acne Sequelae

An integrative approach for acne treatment is necessary as acne lesions and acne-related scars often coexist in clinical practice. Research highlights the psychosocial impact of acne scarring, including its effects on self-perception, social functioning, and management strategies.[9,10] This underscores why EBDs are being actively adopted in clinical practice. Timely management of acne lesions is crucial to prevent additional sequelae (like post-acne erythema and pigmentation), necessitating effective and targeted interventions to control the acne burden.[11,12]

Due to the complexity of acne pathogenesis, conventional treatments alone may not fully address all clinical aspects of acne. Therefore, EBDs are increasingly being explored as complementary solutions. EBDs represent one modality to treat acne and may offer the greatest benefit when used with prescription treatments.[9]

TABLE 2.

International Acne Guidelines Focused on Prescription Acne Treatment		
Journal	**Year**	**Title**
Journal of the American Academy of Dermatology	2024	Guidelines of care for the management of acne vulgaris
Journal of the European Academy of Dermatology and Venereology	2016	Guideline for the Treatment of Acne (Update 2016)
Canadian Medical Association Journal	2016	Management of acne: Canadian clinical practice guideline

TABLE 3.

Used for Acne			
Light/IPL	**Photoexcitation**	**Mechanical**	**High-Energy Light/Laser**
These devices use broadband light to target *C. acnes* and inflammation	Photodynamic therapy (PDT) involves activation of a photosensitizing agent like ALA or MAL by light to produce a therapeutic effect.	These devices physically disrupt inflammatory acne lesions (papules, pustules, nodules, cysts) and non-inflammatory acne lesions (comedones), as well as acne scarring (atrophic scars, hypertrophic scars/keloids, PIE/PIH).	These devices use coherent, monochromatic light sources that dliver high energy, focused light to specific skin targets.
Examples: • Blue light • Red light • IPL	Examples: • ALA-PDT with blue or red light • ALA + PDL • Gold nanoparticle-mediated photothermal therapy (AuNP-PTT)	Examples: • Microdermabrasion • Microneedling • Radiofrequency	Examples: • 1728 Laser • PDL • Nd:YAG Laser • Diode lasers • Fractional lasers (Ablative and non-ablative)

IPL, intense pulsed light; ALA, aminolevulinic acid; MAL, methyl aminolevulinate; PIE, post-inflammatory erythema; PIH, post-inflammatory hyperpigmentation; PDL, pulsed dye laser; Nd:YAG, neodymium-doped yttrium aluminum garnet.

Published acne guidelines and consensus papers (Table 2) provide further details on prescription acne treatment.[6-8] This paper will focus on EBDs and integrating topical skin care with EBD therapies for acne.

Energy-Based Devices

EBDs can be classified into different categories (Table 3) with varying modes of action and side effects.[13-15] Depending on the EBD, they can be used to treat active acne, acne-related dyschromia, and/or acne-related scarring.

Laser and light-based therapies are increasingly recognized as effective and safe treatment options for acne and its sequelae.[14] In clinical trials, the 1726 nm laser demonstrated substantial potential as an effective and well-tolerated therapeutic option for treating mild-to-severe acne.[16,17] In a prospective, open-label, single-arm study of 104 participants with moderate-to-severe facial acne who received 3 laser treatments at 3 (-1/+2)-week intervals, treatment with the 1726 nm laser was well-tolerated with durable progressive post-treatment improvement to at least 26 weeks for moderate-to-severe acne across skin types.[17] Clinical trials have also demonstrated significant improvement in inflammatory acne with modalities like intense pulsed light (IPL), blue-red LED combinations, and photodynamic therapy (PDT).[13] These therapies are effective across a spectrum of acne presentations, including papular, pustular, and comedonal acne, and they show promise as standalone or adjunctive treatments in cases where traditional therapies are less effective, such as in severe acne.[14]

Among light devices, PDT is the most studied, although it has post-operative downtime and expected side effects that include erythema, crusting, pain, and peeling over 7 to 14 days. It has demonstrated superior efficacy compared with some conventional topical and oral acne therapies, including topical adapalene and systemic doxycycline. IPL has also been extensively studied and has demonstrated favorable outcomes.[18] Nevertheless, the variability in study design, device settings, and treatment regimens limits the generalization of findings.

It is important to note that there are no head-to-head prospective trials comparing the efficacy of EBDs to prescriptions. Furthermore, the quality of EBD studies for acne is limited, with most, if not all, studies lacking an adequate control. Many existing studies are also non-randomized and industry-sponsored, underscoring the need for more rigorous, controlled trials to provide improved guidance on applying these modalities.[18,19]

Advantages of laser- and light-based treatments include reduced risk of antibiotic resistance, improved patient adherence, and improvement in skin quality and texture with minimal systemic side effects. However, multiple sessions are often required, which may present a cost barrier for some patients, and treatment results are variable. Treatments are also often painful and associated with downtime. Thorough patient counseling and informed consent are essential.[18]

Traditionally, clinicians treated active acne before addressing sequelae; however, the panel recommends a more proactive approach of treating both simultaneously when appropriate. Early intervention with EBDs may reduce long-term sequelae and improve overall outcomes. Combination therapy with prescription medications and EBDs may also be optimal for certain populations. For example, patients with nodulocystic and severe acne who are on, or have recently completed, isotretinoin are likely to be among those who would benefit from intervention with EBD to treat dyschromia and mitigate scarring.[9]

TABLE 4.

Key Components of a Skincare Regimen in Patients With Acne	
Skincare	**Considerations**
Cleanser	• Non-comedogenic
Antioxidants	• Vitamin C (ascorbic acid) and vitamin E, omega 3 fatty acids, polyphenols
Moisturizer	• Gentle, lipid-enhanced, with physiologic pH (<6.5) • Non-¬comedogenic
Photoprotection	• Broad-spectrum SPF 50+

SPF, sun protection factor.

Skin Care

Appropriate skin care (Table 4) plays an essential role in managing acne and preventing acne-related sequelae, such as dyschromia and scarring. A gentle cleanser and moisturizer, sunscreen, and antioxidants are key components of a skincare regimen that should be used regularly in individuals with acne.[1,2,20]

Moisturizers can reduce skin irritation by improving stratum corneum hydration and restoring skin barrier function. In those with acne, it is important to select non-comedogenic moisturizers.[1,2]

Research shows a link between sebum oxidation and the formation of blemishes.[3] Blemish-prone skin has higher levels

TABLE 5.

Evidence to Support the Use of Topical Antioxidants and AHA/BHA in Patients With Acne			
Agent	**Article Title**	**Key Findings**	**References**
Antioxidant	A silymarin antioxidant serum improves facial acne alone and as part of a treatment regimen	Silymarin is shown in clinical testing to have significant benefits in reducing lipid peroxidation, oiliness, and PIH, and in improving key markers of skin aging. Additionally, the serum can be used alone or as adjunctive treatment in acne therapy to further benefit aging, acne-prone skin.	Draelos Z, et al. JDD, 2024.
Antioxidant	Efficacy and safety of silymarin containing antioxidant serum as an adjuvant treatment of mild-to-moderate acne vulgaris: A prospective, open-label pilot study	The 0.5% Silymarin-containing antioxidant formulation improved acne's clinical severity and related skin biophysical parameters.	Kim J, et al. JCD, 2022.
Antioxidant	Treatment of Acne Vulgaris-Associated Post-Inflammatory Dyschromia With Combination of Non-Ablative Laser Therapy and Topical Antioxidants	A statistically significant decrease in PIH and intralesional melanin was seen in patients treated with a combination silymarin/salicylic acid/L-ascorbic acid/ferulic acid (SSAF) and non-ablative laser therapy. Improvement of both PIE and PIH was augmented in combination with SSAF and laser-treated patients versus the laser-only group.	Hu J, et al. JDD, 2024.
Antioxidant	Epigallocatechin-3-gallate improves acne in humans by modulating intracellular molecular targets and inhibiting *P. acnes*	EGCG, the major polyphenol in green tea, reduced sebum, reduced inflammation, and significantly improved acne in an 8-week randomized, split-face, clinical trial.	Yoon JY, et al. JID, 2013.
AHA/BHA	Safety and efficacy of two anti-acne/anti-aging treatments in subjects with photodamaged skin and mild to moderate acne vulgaris	The combination salicylic acid, capryloyl salicylic acid, HEPES, glycolic acid, citric acid, and dioic acid product is an effective treatment for improving skin tone, reducing blemishes, and addressing signs of aging and acne. It performs comparably to 0.025% tretinoin, providing superior improvements in skin tone evenness, clarity, and blemish reduction. Early improvements are noticeable. Both treatments show similar results in reducing fine lines, clogged pores, roughness, and dullness.	Kircik L, et al. JDD, 2012.
AHA/BHA	Efficacy and safety of a facial serum and mask containing salicylic acid and lipohydroxy acid in acne management: A randomized controlled trial	The study serum improved skin conditions by regulating skin barrier function and achieving a balance of skin hydration and sebum secretion, removing comedones, and improving PIE and PIH. Addition of the mask accelerated the effects without compromising safety.	Li S, et al. JCD, 2023.
AHA/BHA	Clinical evaluation of the efficacy of a facial serum containing dioic acid, glycolic acid, salicylic acid, LHA, citric acid, and HEPES in treating post-inflammatory hyperchromia and controlling oily skin in patients with acne vulgaris	The daily treatment using the investigational product showed an interesting decrease both in the grade and the number of post-inflammatory hyperchromia acne lesions after 56 days, and in the oiliness after 7 days, remaining stable through the study period.	Campos V, et al. JCD, 2021.

PIH, post-inflammatory hyperpigmentation; PIE, post-inflammatory erythema; EGCG, epigallocatechin gallate; HEPES, N-2-hydroxyethylpiperazine-N'-2-ethanesulfonic acid; LHA, lipohydroxy acid.

of sebum and lower levels of antioxidants, making it more vulnerable to lipid oxidation and blemish formation.[21,22] Lipid peroxidation alters the composition of sebum and creates an environment that supports the overgrowth of *C. acnes*, triggering an inflammatory response and leading to breakouts.[23]

Evidence supports using topical antioxidants in the treatment of acne (Table 5).[3,24-30] Antioxidants protect against lipid peroxidation.[22] A 12-week study examining the role of a silymarin antioxidant serum alone and in combination with a prescription acne treatment regimen in improving facial appearance in blemish-prone skin demonstrated a 45% reduction in inflammatory lesions and a 43% reduction in noninflammatory lesions after 12 weeks of silymarin antioxidant serum use.[3] Thus, incorporating topical antioxidants into a skincare routine for acne-prone skin may help improve patient outcomes.

Furthermore, since ultraviolet light (UV) exposure can worsen acne and induce PIE/PIH, sunscreen is essential to protect the skin.[20] Advisors recommend that patients be advised to use non-comedogenic sunscreen.

Periprocedural Care for EBDs

Skincare regimens may need to be adjusted before and after treatment with EBDs. Pre- and post-procedural care vary depending on the device and procedure (Figure 2). The panel described best practices for adjusting skin care according to the type of EBD, as outlined below.

Pre-procedure skin care

Prior to EBD procedures, moisturizers help hydrate the stratum corneum and enhance barrier function—a crucial property for patients with acne, whose skin may be compromised by topical or systemic acne treatments. A healthy skin barrier may reduce the risk of excessive irritation during treatment.[2]

Antioxidants also play an important role pre-procedure. Studies have shown that EBD treatment may be combined with pre-procedure topical antioxidants to optimize treatment outcomes.[1]

Post-procedure skin care

Post-procedure care depends on the laser and the timeframe. Patients should be counseled to continue using gentle skin care and adequate sunscreen (SPF >50) post-procedure.[1]

Moisturizers support recovery by promoting barrier repair, reducing transepidermal water loss, and soothing post-procedural discomfort, such as dryness, tightness, or flaking. Choosing non-comedogenic, fragrance-free formulations with ingredients like ceramides or hyaluronic acid may further help prevent post-treatment irritation.[2]

Antioxidants are also a beneficial component of post-procedure skin care. In a double-blind, randomized split-face trial of antioxidants (Vitamin C, E, and Ferulic acid) to decrease post-procedure recovery time in fractional ablative laser resurfacing, antioxidant use correlated with more rapid wound healing and was well-tolerated.[1,31]

Photoprotection with sunscreen is also essential following EBD procedures. Sunscreen protects sensitive skin from UV radiation and reduces the risk of PIH following the procedure.[2] Sunscreen may also shorten recovery time following EBD procedures.[20]

The panel agreed that acne treatment interruptions are unnecessary for patients undergoing treatment with light/IPL, photoexcitation, or mechanical procedures. However, individuals undergoing high-energy light/laser procedures should be advised to avoid irritants, topical retinoids, and benzoyl peroxide immediately prior to the procedure. In these cases, the panel suggested that topical retinoids and prescription treatments can be restarted 1 to 2 weeks after the high-energy light/laser procedure.

DISCUSSION

Integrating periprocedural skin care for EBDs can enhance treatment outcomes, improve patient experience, and reduce downtime. Moisturizers are critical during both the pre- and post-procedural phases when using EBDs for treating acne. Maintaining optimal skin hydration is essential for protecting the skin barrier, reducing the risk of irritation, and supporting effective healing.[2]

Topical antioxidants play an important role in acne by soothing inflammation and supporting skin barrier function.[22] Periprocedural use of antioxidants has been shown to promote tissue healing.[1]

Photoprotection should be incorporated into acne treatment. Broad-spectrum sunscreens protect from UV radiation and can provide stratum corneum hydration, enhance the skin barrier function, and reduce transepidermal water loss.[20] Post-procedure use of sunscreen may also shorten recovery time and reduce post-laser PIH.[1]

Limitations

The pre-meeting survey focused on office-based devices and did not capture information on over-the-counter devices. Additionally, sunscreen was not explicitly included in the skincare-related survey questions, despite being a key component of skin care in those with acne. The algorithm presented reflects expert consensus informed by current literature. While alternative approaches exist, the algorithm and recommendations represent best practices developed by a panel of expert clinicians and supported by evidence in the literature.

CONCLUSION

The algorithm presents an integrative approach for treating acne and its sequelae, with concurrent use of prescription acne treatments, skin care, and EBDs for optimal patient outcomes. When undergoing procedures with EBDs, periprocedural skin care with gentle cleansers, moisturizers, photoprotection, and antioxidants may improve treatment outcomes and maximize procedural tolerability. The panel provided best practices for integrating skin care with EBD procedures for acne.

DISCLOSURES

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REFERENCES

1. Alexis AF, Andriessen A, Beach RA, et al. Periprocedural skincare for nonenergy and nonablative energy-based aesthetic procedures in patients with skin of color. *J Cosmet Dermatol.* 2025;24(1):e16712. doi:10.1111/jocd.16712
2. Baldwin HE, Ablon G, Callender V, et al. Challenges in adult acne and the role of skin care in managing the condition. *J Drugs Dermatol.* 2024;23(8):674-679. doi:10.36849/JDD.8471
3. Draelos ZD, Kerscher M, Lynch S, White S, Choudhary H. A silymarin antioxidant serum improves facial acne alone and as part of a treatment regimen. *J Drugs Dermatol.* 2024;23(4):233-238. doi:10.36849/JDD.8120
4. Ding Y, Zhang C, Xiang LF. Application of integrated skincare in medical aesthetics: A literature review. *J Eur Acad Dermatol Venereol.* 2024;38 Suppl 6:5-16. doi:10.1111/jdv.19606
5. Zhang C, Song W, Yu B, et al. Expert consensus on perioperative integrated skincare for noninvasive energy-based device aesthetic procedures in clinical practice in China. *J Eur Acad Dermatol Venereol.* 2024;38 Suppl 6:26-36. doi:10.1111/jdv.19857
6. Reynolds RV, Yeung H, Cheng CE, et al. Guidelines of care for the management of acne vulgaris. *J Am Acad Dermatol.* 2024;90(5):1006.e1-1006.e30. doi:10.1016/j.jaad.2023.12.017
7. Asai Y, Baibergenova A, Dutil M, et al. Management of acne: Canadian clinical practice guideline. *CMAJ.* 2016;188(2):118-126. doi:10.1503/cmaj.140665
8. Nast A, Dréno B, Bettoli V, et al. European evidence-based (S3) guideline for the treatment of acne - update 2016 - short version. *J Eur Acad Dermatol Venereol.* 2016;30(8):1261-1268. doi:10.1111/jdv.13776
9. Salameh F, Shumaker PR, Goodman GJ, et al. Energy-based devices for the treatment of Acne Scars: 2022 International consensus recommendations. *Lasers Surg Med.* 2022;54(1):10-26. doi:10.1002/lsm.23484
10. Hazarika N, Archana M. The psychosocial impact of acne vulgaris. *Indian J Dermatol.* 2016;61(5):515-520. doi:10.4103/0019-5154.190102
11. Zhu Z, Zhong X, Luo Z, et al. Global, regional and national burdens of acne vulgaris in adolescents and young adults aged 10-24 years from 1990 to 2021: a trend analysis. *Br J Dermatol.* 2025;192(2):228-237. doi:10.1093/bjd/ljae352
12. Tong LX, Brauer JA. Lasers, Light, and the Treatment of Acne: A Comprehensive Review of the Literature. *J Drugs Dermatol.* 2017;16(11):1095-1102.
13. Handler MZ, Bloom BS, Goldberg DJ. Energy-based devices in treatment of acne vulgaris. *Dermatol Surg.* 2016;42(5):573-585. doi:10.1097/DSS.0000000000000715
14. Nestor MS, Swenson N, Macri A. Physical modalities (devices) in the management of acne. *Dermatol Clin.* 2016;34(2):215-223. doi:10.1016/j.det.2015.11.003
15. Ozog DM, Rkein AM, Fabi SG, et al. Photodynamic therapy: a clinical consensus guide. *Dermatol Surg.* 2016;42(7):804. doi:10.1097/DSS.0000000000000800
16. Goldberg D, Kothare A, Doucette M, et al. Selective photothermolysis with a novel 1726 nm laser beam: A safe and effective solution for acne vulgaris. *J Cosmet Dermatol.* 2023;22(2):486-496. doi:10.1111/jocd.15602
17. Alexiades M, Kothare A, Goldberg D, Dover JS. Novel 1726 nm laser demonstrates durable therapeutic outcomes and tolerability for moderate-to-severe acne across skin types. *J Am Acad Dermatol.* 2023;89(4):703-710. doi:10.1016/j.jaad.2023.05.085
18. Li MK, Liu C, Hsu JTS. The use of lasers and light devices in acne management: an update. *Am J Clin Dermatol.* 2021;22(6):785-800. doi:10.1007/s40257-021-00624-5
19. Goldberg DJ, Andriessen A, Bhatia AC, et al. Treatment of mild to severe acne with 1726 nm laser: A safe alternative to traditional acne therapies. *J Cosmet Dermatol.* 2023;22(11):3026-3032. doi:10.1111/jocd.15964
20. Piquero-Casals J, Morgado-Carrasco D, Rozas-Muñoz E, et al. Sun exposure, a relevant exposome factor in acne patients and how photoprotection can improve outcomes. *J Cosmet Dermatol.* 2023;22(6):1919-1928. doi:10.1111/jocd.15726
21. Bowe WP, Patel N, Logan AC. Acne vulgaris: the role of oxidative stress and the potential therapeutic value of local and systemic antioxidants. *J Drugs Dermatol.* 2012;11(6):742-746.
22. Bowe WP, Logan AC. Clinical implications of lipid peroxidation in acne vulgaris: old wine in new bottles. *Lipids Health Dis.* 2010;9:141. doi:10.1186/1476-511X-9-141
23. Wong A, Zhang B, Jiang M, et al. Oxidative stress in acne vulgaris. *Clin Dermatol Ther.* 2016;3(1):1-6. doi:10.24966/CDT-8771/100020
24. Kim J, Lee YN, Lee J, et al. Efficacy and safety of silymarin containing antioxidant serum as an adjuvant treatment of mild-to-moderate acne vulgaris: A prospective, open-label pilot study. *J Cosmet Dermatol.* 2023;22(2):561-568. doi:10.1111/jocd.15439
25. Baumann LS, Oresajo C, Yatskayer M, et al. Comparison of clindamycin 1% and benzoyl peroxide 5% gel to a novel composition containing salicylic acid, capryloyl salicylic acid, HEPES, glycolic acid, citric acid, and dioic acid in the treatment of acne vulgaris. *J Drugs Dermatol.* 2013;12(3):266-269.
26. Kircik LH, Dahl A, Yatskayer M, et al. Safety and efficacy of two anti-acne/anti-aging treatments in subjects with photodamaged skin and mild to moderate acne vulgaris. *J Drugs Dermatol.* 2012;11(6):737-740.
27. Li S, He X, Zhang Z, et al. Efficacy and safety of a facial serum and a mask containing salicylic acid and lipohydroxy acid in acne management: A randomized controlled trial. *J Cosmet Dermatol.* 2023;22(9):2502-2511. doi:10.1111/jocd.15746
28. Campos V, Pitassi L, Kalil C, et al. Clinical evaluation of the efficacy of a facial serum containing dioic acid, glycolic acid, salicylic acid, LHA, citric acid, and HEPES in treating post-inflammatory hyperchromia and controlling oily skin in patients with acne vulgaris. *J Cosmet Dermatol.* 2021;20(6):1766-1773. doi:10.1111/jocd.14016
29. Hu JK, Quinonez RL, Antasiuk V, et al. Treatment of acne vulgaris-associated post-inflammatory dyschromia with combination of non-ablative laser therapy and topical antioxidants. *J Drugs Dermatol.* 2024;23(9):769-773. doi:10.36849/JDD.8309
30. Yoon JY, Kwon HH, Min SU, et al. Epigallocatechin-3-gallate improves acne in humans by modulating intracellular molecular targets and inhibiting P. acnes. *J Invest Dermatol.* 2013;133(2):429-440. doi:10.1038/jid.2012.292
31. Waibel JS, Mi QS, Ozog D, et al. Laser-assisted delivery of vitamin C, vitamin E, and ferulic acid formula serum decreases fractional laser postoperative recovery by increased beta fibroblast growth factor expression. *Lasers Surg Med.* 2016;48(3):238-244. doi:10.1002/lsm.22448

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