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TABLE OF CONTENTS

AARS News

[Highlights from the AARS Annual Networking Reception](#)..... 2

[AARS Call for Grant Applications Closes April 17, 2023!](#) 3

[Call for AARS Volunteers in 2023](#)..... 3

New Medical Research

[Overexpression of hypoxia-inducible factor-1 \$\alpha\$ in hidradenitis suppurativa](#) 3

[Triple-combination clindamycin phosphate](#)..... 4

[Evaluation of 30% supramolecular salicylic acid](#) 4

[Effectiveness and safety of energy-based devices for acne scars](#)..... 5

[A randomized split-face study of photodynamic therapy with St. John's wort](#) 5

[The relationship between the distribution of facial erythema and skin type](#) 5

[Fractional CO₂ -laser versus microneedle radiofrequency for acne scars](#)..... 6

[Low rates of psychosocial screening and lifestyle counseling](#)..... 6

[Ultrasound-triggered interfacial engineering-based microneedle](#) 7

[Increased frequency of clindamycin-resistant cutibacterium acnes strains](#)..... 7

[Serum survivin in acne versus post-acne scarring](#) 8

[Evaluation of the efficacy of RF microneedling and oral isotretinoin](#) 8

Clinical Reviews

[Necrotizing granulomatous papular reaction following multiple pulsed dye laser](#) 9

[Sun exposure, a relevant exposome factor in acne patients](#) 9

[Role of tumor necrosis factor- \$\alpha\$ inhibitors in the treatment and occurrence of acne](#) .. 9

[Management of acne vulgaris with trifarotene](#) 10

[Treatment recommendations for acne-associated hyperpigmentation](#)..... 10

[Efficacy and safety of transplantation of autologous fat](#) 11

[Incidence and factors associated with acne in transgender adolescents](#)..... 11

[Efficacy and safety of low-dose oral isotretinoin monotherapy](#)..... 12

[Real-world case studies showing the effective use of azelaic acid](#) 12



AARS News

Highlights from the AARS Annual Networking Reception

Thank you to those who joined us for our Annual Networking Reception at the beautiful Riverview Room overlooking the magnificent (and drizzly) Mississippi River in historic New Orleans! It was a great opportunity to reconnect, form new relationships, and celebrate the important work of the AARS and its members. Plus, attendees had the chance to react to acne “advice” trending on TikTok and to catch up on the incredible work presented at the AARS Annual Scientific Symposium in 2022! We are particularly grateful for the support of our annual Corporate Benefactors and were pleased to be able to celebrate with them in person!



If you couldn't be there, we look forward to seeing you next year in San Diego. In the meantime, check out the video below that highlights the recent accomplishments of the AARS!

[Watch Here!](#)

AARS Call for Grant Applications Closes April 17, 2023!

The AARS mission is to promote, support, develop and provide an educational forum for the exchange of information related to acne and rosacea and to fund clinical research opportunities for dermatology professionals who strive to improve the care of patients who suffer from acne and rosacea. Available research grant opportunities are listed below.

AARS CLINICAL RESEARCH AWARD (\$10K)

The AARS is proud to offer research grants to advance clinical science, while nurturing new and experienced investigators in the field of acne and rosacea. Dermatology residents, research fellows, and recent graduates are encouraged to apply for clinical research grants. Please refer to the application (downloadable below) for eligibility and application requirements.

[AARS Clinical Research Award Grant Application](#)

AARS RESEARCH SCHOLAR AWARD (\$75K)

The AARS is excited to invite investigators working at the level of Instructor through Associate Professor in the field of acne or rosacea to apply for the Research Scholar Award. The individual selected for the award must have a strong career goal within the field of dermatology generally and be dedicated to furthering knowledge concerning acne or rosacea specifically. Please refer to the application (downloadable below) for eligibility and application requirements.

[AARS Research Scholar Award Grant Application](#)

Call for AARS Volunteers in 2023

We have a variety of programs this year interacting with patients and our members that we'd love to include more dermatologists and dermatology NPs and PAs. We are launching a new case discussion virtual series, ongoing publication and interview opportunities, social media activities, and more! If you're interested, please email Stacey Moore, AARS Executive Director at info@aarsmember.org for more information.

New Medical Research

Overexpression of hypoxia-inducible factor-1 α in hidradenitis suppurativa: The link between deviated immunity and metabolism. Agamia NF, Sorrow OA, Sayed NM, et al. Arch Dermatol Res. 2023 Mar 24. doi: 10.1007/s00403-023-02594-6. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36961533/>

Hypoxia-inducible factor-1 α (HIF-1 α) is the master transcription factor of glycolysis, Th17 cell differentiation and suppression of regulatory T cells. In the skin and serum of patients with psoriasis vulgaris, increased expression of HIF-1 α has been reported, whereas HIF-1 α expression in the skin and serum of patients with hidradenitis suppurativa (HS) has not yet been studied. The objective of the study is to demonstrate if there is a role for HIF-1 α in the pathogenesis of hidradenitis suppurativa, and its relation to HS severity. Twenty patients suffering from hidradenitis suppurativa were included in the study. Punch biopsies were taken from lesional skin for the determination of HIF-1 α expression by immunohistochemical staining, and HIF-1 α gene expression by quantitative reverse transcription real time PCR. Quantification of HIF-1 α protein concentration was done by enzyme-linked immunosorbent assay. Twenty socio-demographically cross-matched healthy volunteers served as controls. We found increased serum levels of HIF-1 α . Literature-derived evidence indicates that the major clinical triggering factors of HS, obesity, and smoking are associated with hypoxia and enhanced HIF-1 α expression. Pro-inflammatory cytokines such as tumor necrosis factor- α [Formula: see text] via upregulation of nuclear factor κ B enhance HIF-1 α expression. HIF-1 α plays

an important role for keratinocyte proliferation, especially for keratinocytes of the anagen hair follicle, which requires abundant glycolysis providing sufficient precursors molecules for biosynthetic pathways. Metformin via inhibition of mTORC1 as well as adalimumab attenuate HIF-1 α expression, the key mediator between Th17-driven deviated immunity and keratinocyte hyperproliferation. In accordance with psoriasis, our study identifies HS as an HIF-1 α -driven inflammatory skin disease and offers a new rationale for the prevention and treatment of HS by targeting HIF-1[Formula: see text] overexpression.

Triple-combination clindamycin phosphate 1.2%/benzoyl peroxide 3.1%/adapalene 0.15% gel for moderate-to-severe acne in children and adolescents: Randomized phase 2 study. Eichenfield LF, Stein Gold L, Kircik LH, et al. *Pediatr Dermatol.* 2023 Mar 22. doi: 10.1111/pde.15283. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36949579/>

Background/objectives: Topical clindamycin phosphate 1.2%/benzoyl peroxide 3.1%/adapalene 0.15% gel (IDP-126) is the first fixed-dose triple-combination formulation in development for acne. This post hoc analysis investigated efficacy and safety of IDP-126 in children and adolescents with moderate-to-severe acne. Methods: In a randomized, double-blind phase 2 study (NCT03170388), participants ≥ 9 years of age with moderate-to-severe acne were eligible for randomization (1:1:1:1) to once-daily IDP-126, one of three dyad combination gels, or vehicle gel for 12 weeks. This post hoc analysis of pediatric participants (n = 394) included children and adolescents up to 17 years of age. Assessments included treatment success, inflammatory/noninflammatory lesion counts, Acne-Specific Quality of Life (Acne-QoL) questionnaire, treatment-emergent adverse events (TEAEs), and cutaneous safety/tolerability. Results: At Week 12, treatment success rates were significantly greater with IDP-126 (55.8%) than with vehicle (5.7%; p < .001) or any of the dyad combinations (range: 30.8%-33.9%; p < .01, all). Lesion reductions with IDP-126 were also significantly greater than with vehicle (inflammatory: 78.3% vs. 45.1%; noninflammatory: 70.0% vs. 37.6%; p < .001, both) and 9.2%-16.6% greater than with any of the dyad combinations. Increases (improvements) from baseline in Acne-QoL domain scores were generally greater with IDP-126 than in any other treatment group. The most common treatment-related TEAEs across treatment groups were application site pain and dryness. Most treatment-related TEAEs were of mild-to-moderate severity. Conclusion: IDP-126 gel-a novel fixed-dose, triple-combination topical formulation for acne-demonstrated superior efficacy to vehicle and three dyad component gels and was well tolerated in children and adolescents with moderate-to-severe acne.

[Download Reference Document](#)

Evaluation of 30% supramolecular salicylic acid followed by 1565-nm non-ablative fractional laser on facial acne and subsequent enlarged pores. Han Q, Zeng J, Liu Y, et al. *Lasers Med Sci.* 2023 Mar 22;38(1):91. doi: 10.1007/s10103-023-03751-z. <https://pubmed.ncbi.nlm.nih.gov/36947275/>

The treatment of acne vulgaris and enlarged pore remains challenging. The 30% supramolecular salicylic acid (SSA) is a newly developed form of SA which affects pathogenic factors of acne. Non-ablative fractional laser (NAFL) promotes remodeling and decreases sebum excretion with minimal side effect. The current study was aimed to evaluate the sequential modality with 30% SSA followed by 1565-nm NAFL on facial acne and subsequent enlarged pores. A 20-week-duration prospective study was performed. Consecutive 4 sessions of 30% SSA treatment were conducted, at 2-week intervals. Two weeks after the last session of 30% SSA, 3 sessions of 1565-nm NAFL treatment were applied, at 4-week intervals. The noninvasive devices measured scores of red areas and pores, cuticle moisture, and sebum secretion. The main subjective evaluation was global acne grading system (GAGS). The side effects were recorded. Compared to baseline, the scores of red areas and pores, sebum secretion, and GAGS significantly decreased after series sessions of 30% SSA treatments (P < 0.05). The sequential application of 1565-nm NAFL maintained the good results (P < 0.05, comparing to baseline) and even further decreased the sebum secretion (P <

0.05, comparing to SSA). The cuticle moisture remained unchanged during whole period, and side effects including tingling sensation, pain, erythema, and edema were quickly reversible and acceptable. The significant improvements of acne and pores were produced by 30% SSA, and 1565-nm NAFL inhibited the sebum secretion and maintained the efficacies of 30% SSA. The sequential modality of 30% SSA followed by 1565-nm NAFL was an alternative choice for acne vulgaris accompanied with enlarged pores.

Effectiveness and safety of energy-based devices for acne scars: A network meta-analysis of randomized controlled trials. Li MY, Huang YL, Chen JH, et al. *Facial Plast Surg Aesthet Med*. 2023 Mar 22. doi: 10.1089/fpsam.2022.0383. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36946785/>

Background: Acne vulgaris is an inflammatory disease of the pilosebaceous unit in teenagers. Acne-induced inflammation leads to acne scarring. Scholars have discussed acne scar treatments; however, energy-based devices with satisfactory outcomes remain unidentified. Objective: To measure quartile grading scale and visual analog scale (VAS) to study the difference between energy-based devices. Methods: We included randomized controlled trials that evaluated patients with acne scars. The primary outcomes were the quartile grading scale and VAS scores. We used Confidence in Network Meta-Analysis to evaluate indirectness, imprecision, heterogeneity, and incoherence. Results: A total of 26 studies met the inclusion criteria. The quartile grading scale results revealed that ablative fractional laser was significantly more effective than nonablative fractional laser (standard mean difference [SMD]: 0.516, confidence interval [95% CI]: 0.281-0.750) and radiofrequency treatment (SMD: 0.941, 95% CI: 0.540-1.342). Moreover, nonablative fractional laser was significantly more effective than radiofrequency treatment (SMD: 0.426, 95% CI: 0.049-0.802). No significant difference in VAS score was found among the devices. Conclusion: Ablative fractional laser is an effective treatment for acne scars although it is associated with more pain.

A randomized split-face study of photodynamic therapy with St. John's wort and indole-3-acetic acid for the treatment of acne. Kim BR, Kim M, Na JI, et al. *Dermatol Surg*. 2023 Mar 21. doi: 10.1097/DSS.0000000000003742. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36946749/>

Background: St. John's wort (SJW) contains hypericin, a powerful photosensitizer with antimicrobial and anti-inflammatory activities. Objective: To compare the efficacy and safety of SJW-photodynamic therapy (PDT) with that of indole-3-acetic acid (IAA)-PDT for the treatment of acne and investigate the skin rejuvenating effects of SJW-PDT. Materials and methods: In vitro experiments were conducted to examine the generation of reactive oxygen species and the antimicrobial effects of SJW-PDT. In the prospective, double-blind, split-face, randomized study, 31 patients with facial acne were treated with SJW or IAA with simultaneous illumination of red light and green light. Results: SJW produces free radicals with visible light irradiation, and the growth of *Cutibacterium acnes* and *Staphylococcus aureus* is significantly suppressed. One week after the last treatment, the acne lesion counts were significantly decreased in both groups (56.5% reduction in SJW, $p < .001$ vs 57.0% in IAA, $p < .001$). Significant reductions in sebum secretion, erythema index, roughness, and wrinkles were observed in both groups after the treatment. No side effects were observed. Conclusion: SJW-PDT is a simple, safe, and effective treatment option for acne that is also beneficial for skin rejuvenation.

The relationship between the distribution of facial erythema and skin type in rosacea patients: A cross-sectional analysis. Tao M, Li M, Zhang Y, et al. *Arch Dermatol Res*. 2023 Mar 20. doi: 10.1007/s00403-023-02602-9. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36939880/>

Individuals with rosacea have different facial erythema distribution patterns; however, whether they are related to the skin type is unclear. This study enrolled 201 Chinese patients, including 195 females and six males, diagnosed with rosacea. Facial images were taken using the VISIA® Complexion Analysis System, and red-area images were further

analyzed. The erythema distribution pattern of rosacea was divided into peace signs, wing shapes, and neither of the two patterns, according to the distribution location. Skin types were divided according to the Fitzpatrick skin type, and oily-dry skin subtypes were determined according to the Baumann skin-type scale. There were 130 and 44 cases of typical peace signs and typical wing shapes, respectively. The remaining 27 cases were of neither type. Among the 76 patients with peace-sign patterns, the majority (58.5%) had oily combination skin. Among the patients with a typical wing shape, 43 (97.7%) had dry combination skin. Among the 27 patients with no peace-sign or wing-shape pattern, 17 (63.0%) had dry combination skin ($p < 0.05$). The peace sign pattern was more common in individuals with darker skin tones ($p < 0.05$). The differences in the immune microenvironment, Demodex habitation, and altered lipid content may explain the presence of the peace-sign pattern in the oily combination skin population. Wing-type patterns are associated with the lateral parts of the cheeks and could be caused by abnormal vessel dilations of the anatomic branches of the zygomatic-facial and facial arteries, which indicates that the main pathogenesis for this type of rosacea may be neurovascular. Our study is the first to report that facial erythema distribution characteristics of rosacea are associated with skin types.

Fractional CO₂ -laser versus microneedle radiofrequency for acne scars: A randomized, single treatment, split-face trial. Hendel K, Karmisholt K, Hedelund L, Haedersdal M. *Lasers Surg Med.* 2023 Mar 19. doi: 10.1002/lsm.23655. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36934435/>

Background: Ablative fractional CO₂ laser (AFL) is an established first-line energy-based treatment for acne scars. Microneedle radiofrequency (MNRF) is an emerging treatment, also targeting the skin in fractions. No studies have so far compared AFL with MNRF for acne scars in a direct controlled, side-by-side comparison. In this study, we compared AFL and MNRF treatments for acne scars in a randomized split-face trial with blinded response evaluation, objective measures, and patient-reported outcomes. Study design/materials and method: Fifteen patients with moderate to severe acne scars were included. At baseline each patient had two similar test areas identified, these were randomized to receive a single treatment with either AFL or MNRF. Standardized multilayer techniques were applied with AFL and MNRF, first targeting the scar base, thereafter the entire scar area. Outcome measures included blinded evaluation of clinical improvement of scar texture (0-10 scale) at 1- and 3-months follow-up, local skin reactions (LSR), pain according to Visual Analogue Scale (VAS), skin integrity quantified by transepidermal water loss, and patient satisfaction. Results: Fifteen patients completed the study with a median test area size of 24.6 cm² (interquartile range [IQR] 14.9-40.6). A single treatment with AFL or MNRF equally resulted in a median 1-point texture improvement after 3 months follow-up ($p < 0.001$). Best responders achieved up to a 3-point improvement ($n = 3$ test areas, 10% of treatment areas). Erythema and loss of skin integrity was more intense after AFL compared with MNRF after 2-4 days ($p < 0.001$). Patients reported MNRF (VAS 7.0) to be significantly more painful than AFL (5.5) ($p = 0.009$). Patients were generally satisfied with the overall outcome on a 10-point scale at median 6 for both treatments (IQR 5-7). Conclusion: AFL and MNRF treatments are equally effective at improving texture in skin with acne scars. AFL resulted in more pronounced LSRs whereas MNRF was more painful. Patients were generally satisfied with the overall outcome.

Low rates of psychosocial screening and lifestyle counseling in hidradenitis suppurativa patients in the USA. Shih T, De DR, Rick J, et al. *Skin Appendage Disord.* 2023 Mar;9(2):94-98. doi: 10.1159/000528253. Epub 2023 Jan 5. <https://pubmed.ncbi.nlm.nih.gov/36937161/>

Introduction: Although hidradenitis suppurativa (HS) is associated with psychosocial comorbidities such as depression as well as modifiable comorbidities such as obesity, rates of psychosocial screening and lifestyle counseling in the USA have not been characterized. Methods: This cross-sectional study utilized publicly available data from the National Ambulatory Medical Care Survey (NAMCS) between 2008 and 2018 to identify visits with a diagnosis of HS

(ICD-9 code 705.83, ICD-10 code L73.2). T tests and multivariate logistic regressions analyzed trends in rates of screening and counseling while controlling for race, sex, and age. Survey weights are applied to each visit to represent a national sample. Results: Depression screening was completed in only 2% of reported visits. No visits reported screening for alcohol misuse, substance abuse, or domestic violence. There were low rates of counseling for weight reduction (7.8%), diet and nutrition (3.3%), exercise (2.4%), smoking (1.0%), and substance abuse (0.7%). Black patients and individuals with public health insurance received less screening and counseling overall. Conclusion: Rates of psychosocial screening and counseling on lifestyle modifications are low in ambulatory clinic visits for HS patients, and there are disparities based on race and insurance status. Implementing strategies to incorporate routine psychosocial screening and lifestyle counseling into visits may improve HS patient outcomes.

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Ultrasound-triggered interfacial engineering-based microneedle for bacterial infection acne treatment. Xiang Y, Lu J, Mao C, et al. *Sci Adv.* 2023 Mar 10;9(10):eadf0854. doi: 10.1126/sciadv.adf0854. Epub 2023 Mar 8. <https://pubmed.ncbi.nlm.nih.gov/36888703/>

Acne is an inflammatory skin disease mainly caused by *Propionibacterium acnes*, which can cause local inflammatory reactions and develop into chronic inflammatory diseases in severe cases. To avoid the use of antibiotics and to effectively treat the site of acne, we report a sodium hyaluronate microneedle patch that mediates the transdermal delivery of ultrasound-responsive nanoparticles for the effective treatment of acne. The patch contains nanoparticles formed by zinc porphyrin-based metal-organic framework and zinc oxide (ZnTCPP@ZnO). We demonstrated activated oxygen-mediated killing of *P. acnes* with an antibacterial efficiency of 99.73% under 15 min of ultrasound irradiation, resulting in a decrease in levels of acne-related factors, including tumor necrosis factor- α , interleukins, and matrix metalloproteinases. The zinc ions up-regulated DNA replication-related genes, promoting the proliferation of fibroblasts and, consequently, skin repair. This research leads to a highly effective strategy for acne treatment through the interface engineering of ultrasound response.

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Increased frequency of clindamycin-resistant cutibacterium acnes strains isolated from Japanese patients with acne vulgaris caused by the prevalence of exogenous resistance genes. Koyanagi S, Koizumi J, Nakase K, et al. *J Dermatol.* 2023 Mar 7. doi: 10.1111/1346-8138.16757. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36880295/>

Cutibacterium acnes, a resident bacterium of the skin, is a target for antimicrobial treatment of acne vulgaris, because it exacerbates inflammation. Recently, antimicrobial-resistant *C. acnes* strains have been isolated worldwide, and their prevalence has led to failure of antimicrobial treatment. This study aimed to analyze the antimicrobial resistance of *C. acnes* strains isolated from Japanese patients with acne vulgaris who visited the hospital and dermatological clinics between 2019 and 2020. Resistance rates to roxithromycin and clindamycin increased during 2019 to 2020 compared with those during 2013 to 2018. Additionally, the proportion of doxycycline-resistant and low-susceptibility strains (minimum inhibitory concentration [MIC] ≥ 8 $\mu\text{g/mL}$) increased. No difference in clindamycin resistance rates between patients with and without a history of antimicrobial use was observed during 2019 to 2020, which were significantly higher for patients with a history than for patients without a history during 2016 to 2018. The proportion of high-level clindamycin-resistant strains (MIC ≥ 256 $\mu\text{g/mL}$) gradually increased; particularly, the resistance rate was 2.5 times higher in 2020 than that in 2013. The proportion of strains showing high-level clindamycin resistance that also have the exogenous resistance genes *erm(X)* or *erm(50)*, which confer high resistance, showed a strong positive correlation ($r = 0.82$). Strains with the multidrug resistance plasmid pTZC1 encoding *erm(50)* and *tet(W)* genes were frequent in clinic patients. Notably, most strains with *erm(X)* or *erm(50)* were classified as single-locus sequence types

A and F (traditional types IA1 and IA2). Our data show that the prevalence of antimicrobial-resistant *C. acnes* is increasing in patients with acne vulgaris attributable to acquisition of exogenous genes in specific strains. To control the increasing prevalence of antimicrobial-resistant strains, it is important to select the appropriate antimicrobials while taking into consideration the latest information on resistant strains.

Serum survivin in acne versus post-acne scarring and the possible effect of isotretinoin therapy on its level.

Hussein TM, Tawfik NTA, Abd-Rabboh MMA, Taha AAA. *Acta Dermatovenerol Alp Pannonica Adriat.* 2023 Mar;32(1):7-10. <https://pubmed.ncbi.nlm.nih.gov/36945760/>

Introduction: Acne vulgaris is a common chronic inflammatory disorder of the pilosebaceous unit. Survivin is an apoptosis inhibitor protein, and it contributes crucially to cell cycle regulation. This study measures the serum level of survivin in acne and post-acne scarring patients, and assesses the possible effect of isotretinoin therapy on its level. **Methods:** Sixty participants, including 40 acne patients (Group IA, IB), and 20 age- and sex-matched controls (Group II) were included. Group IA included 20 patients with active moderate-to-severe acne without scarring, and this group was further prescribed oral isotretinoin therapy for 3 months. Group IB included 20 patients with post-acne scarring of a duration not more than 6 months, without evident active acne lesions. Serum survivin levels were measured in the three groups using an enzyme-linked immunosorbent assay. **Results:** There was a statistically significant higher serum survivin level in the acne scar group, followed by the active acne group, than in controls. In addition, there was a statistically significant reduction in survivin levels after treatment, and it was positively correlated with a reduction in the global acne grading system (GAGS) in the active acne group. **Conclusions:** Survivin may play a role in the evolution of acne and acne scarring, and it could be a possible target for isotretinoin therapy.

Evaluation of the efficacy of RF microneedling and oral isotretinoin in comparison with oral isotretinoin alone in the treatment of acne vulgaris.

Hasan IA, Mahdi ZN, Obeed RK. *Postepy Dermatol Alergol.* 2023 Feb;40(1):111-114. doi: 10.5114/ada.2022.124109. <https://pubmed.ncbi.nlm.nih.gov/36909913/>

Introduction: Acne vulgaris is one of the most common skin illnesses in teenagers, affecting 80% of people aged 11-30 years. Scars on the face are caused by high inflammation, severe acne, physical manipulation of the skin, and delayed treatment. **Aim:** To compare the effectiveness and safety of an automated RF micro needling device and oral isotretinoin with oral isotretinoin alone for treating active acne. **Material and methods:** A cross-sectional study of 40 moderate acne sufferers. Twenty patients with active acne were treated with an automated RF microneedling device and isotretinoin 0.5-1 mg/kg. Group B included 20 people with active acne, who were given a single dose of 0.5-1 mg/kg isotretinoin. **Results:** In this cross-sectional research, 40 acne vulgaris patients were divided into 2 groups: group A: 23.8 ±3.2 years old, 58.95 ±5.5 kg, 13 females, and 7 males. There were 15 females and 5 males in group B: 24.4 ±3.7 years old and weighing 56.4 ±8.46 kg. After 12 weeks, group A shows better global acne assessment scale (GAAS) outcomes than group B than group B. After 6 months, group A showed better results than group B. The GAAS meaning global acne assessment scale did not change after 4-8 weeks of treatment. There was no age or weight difference. **Conclusions:** Acne vulgaris may be treated with fractional RF microneedling. Active acne treatment with RF microneedling is safe and effective, has a quicker response, causes less scarring, and reduces recurrence.

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Clinical Reviews

Necrotizing granulomatous papular reaction following multiple pulsed dye laser and hybrid fractional laser treatments for rosacea. Bryar KM, Basti NS, Michels KL, et al. *Ophthalmic Plast Reconstr Surg*. 2023 Mar 27. doi: 10.1097/IOP.0000000000002380. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36972126/>

This is a case report of a single patient who had pulsed dye laser and hybrid fractional laser treatments for facial rosacea and subsequently developed a prolonged papular reaction in and adjacent to the area of treatment, which was unresponsive to topical therapy. Biopsies of these lesions revealed necrotizing granulomas. This is a previously unreported side effect of these laser treatments and clinicians should be aware of this potential sequela.

Sun exposure, a relevant exposome factor in acne patients and how photoprotection can improve outcomes. Piquero-Casals J, Morgado-Carrasco D, Rozas-Muñoz E, et al. *J Cosmet Dermatol*. 2023 Mar 22. doi: 10.1111/jocd.15726. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36946555/>

Background: Acne pathophysiology includes a complex interaction among inflammatory mediators, hyperseborrhea, alteration of keratinization and follicular colonization by *Propionibacterium acnes*. Aims: To describe the impact of the exposome on acne and how photoprotection can improve outcomes. Methods: A narrative review of the literature was carried out; searches with Google Scholar and Pubmed from January 1992 to November 2022 were performed. The keywords used were "acne," "sunscreens," "photoprotection," "cosmetics," "cosmeceuticals," "pathogenesis," "etiology," "exposome," "sunlight," "stress," "lack of sleep," "diet," "postinflammatory hyperpigmentation," "pollution," "exposome," "ultraviolet radiation," and "visible light." Results: Environmental factors such as solar radiation, air pollution, tobacco consumption, psychological stress, diverse microorganisms, nutrition, among others, can trigger or worsen acne. Solar radiation can temporarily improve lesions. However, it can induce proinflammatory and profibrotic responses, and produce post-inflammatory hyperpigmentation and/or post-inflammatory erythema. While photoprotection is widely recommended to acne patients, only four relevant studies were found. Sunscreens can significantly improve symptomatology or enhance treatment and can prevent post-inflammatory hyperpigmentation. Furthermore, they can provide camouflage and improve quality of life. Based on acne pathogenesis, optimal sunscreens should have emollient, antioxidant and sebum controlling properties. Conclusions: The exposome and solar radiation can trigger or worsen acne. UV light can induce post-inflammatory hyperpigmentation/erythema, and can initiate flares. The use of specifically formulated sunscreens could enhance adherence to topical or systemic therapy, camouflage lesions (tinted sunscreens), decrease inflammation, and reduce the incidence of post-inflammatory hyperpigmentation/erythema.

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Role of tumor necrosis factor- α inhibitors in the treatment and occurrence of acne: A systematic review. Sandoval AGW, Vaughn LT, Huang JT, Barbieri JS. *JAMA Dermatol*. 2023 Mar 17;e230269. doi: 10.1001/jamadermatol.2023.0269. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36930143/>

Importance: Tumor necrosis factor- α inhibitors (TNFis) approved to treat several inflammatory diseases are sometimes used off label to treat severe forms of acne that are refractory to conventional therapies. However, use of TNFis can also be followed by acne occurrence, suggesting an association between TNFis and acne. Most of the literature on the topic comprises case reports and series that have not been reviewed in a systematic manner. Objective: To characterize the demographic characteristics, clinical presentations, treatments, and outcomes of patients receiving TNFis to treat acne and patients who develop acne following treatment of other conditions with TNFis. Evidence review: A systematic literature review was performed and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses reporting guidelines. PubMed and Web of Science were

searched from inception through October 17, 2022. Included studies reported on patients of any sex or age who received TNFis whose treatment was followed by resolution or occurrence of acne. Two independent reviewers screened studies based on predefined criteria and extracted data from each study, which were quantitatively combined. Findings: A total of 53 studies reporting on 64 patients who received TNFis for the treatment of acne (n = 47) or who experienced acne after treatment with TNFis for a different condition (n = 17) (mean age, 28.7 years; range, 12-64 years; 6 female individuals [8.8%]) were included. The TNFis used included adalimumab, infliximab, and etanercept. Among the 47 patients treated for acne with TNFis, most had previously received antibiotics (31 [66.0%]) or isotretinoin (32 [68.1%]). Most (44 [93.6%]) experienced partial improvement (25 [53.2%]) or clearance (19 [40.4%]) with very few adverse effects reported (3 [6.4%]). Acne manifested as part of an inflammatory syndrome for 30 patients (63.8%). Among the 17 patients treated TNFis for a different condition followed by the occurrence of acne, only 1 patient (5.9%) reported having a history of acne. Therapy with TNFis was either discontinued (8 [47.1%]) or altered (6 [35.3%]) in most patients due to acne occurrence, typically with improvement in symptoms. Conclusions and relevance: The results of this systematic review suggest that TNFis can be effective in treating refractory acne but can also be associated with the occurrence of acne in certain instances. Further studies elucidating the role that TNF plays in treating and inducing acne could yield insight into off-label TNFi use and acne pathogenesis, potentially guiding clinical care of patients with acne treated or induced by TNFis.

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Management of acne vulgaris with trifarotene. Tan J, Chavda R, Baldwin H, Dreno B. *J Cutan Med Surg.* 2023 Mar 16;12034754231163542. doi: 10.1177/12034754231163542. Online ahead of print.

<https://pubmed.ncbi.nlm.nih.gov/36927117/>

Topical retinoids have an essential role in treatment of acne. Trifarotene, a topical retinoid selective for retinoic acid receptor (RAR) γ , is the most recent retinoid approved for treatment of acne. RAR- γ is the most common isoform of RARs in skin, and the strong selectivity of trifarotene for RAR- γ translates to efficacy in low concentration. Trifarotene, like other topical retinoids, acts by increasing keratinocyte differentiation and decreasing proliferation, which reduces hyperkeratinization. Retinoids have also been shown to inhibit inflammatory pathways via effects on leukocyte migration, toll-like receptors, and Activator Protein (AP)-1. Large-scale randomized, controlled clinical trials have demonstrated trifarotene to be safe, well tolerated, and efficacious in reducing both comedones and papules/pustules of acne. However, unlike all other retinoids, trifarotene is the first topical retinoid with rigorous clinical data on safety and efficacy in truncal acne. Data supporting use of trifarotene to manage acne are reviewed in this publication.

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Treatment recommendations for acne-associated hyperpigmentation: Results of a delphi consensus process and literature review. Taylor S, Elbuluk N, Grimes P, et al. *J Am Acad Dermatol.* 2023 Mar 14;S0190-9622(23)00366-3. doi: 10.1016/j.jaad.2023.02.053. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36924935/>

Acne vulgaris can be associated with hyperpigmentation, particularly in individuals with skin of color. This acne-induced macular hyperpigmentation (AMH), also called post-inflammatory hyperpigmentation or PIH, is often long-lasting and negatively impacts quality of life. Large-scale randomized controlled clinical trials regarding treatment of acne and AMH are lacking. For this reason, evidence-based treatment recommendations cannot be made. Yet AMH is a common condition, and it is important for clinicians to have guidance on management strategies. The authors, a group of 10 board-certified dermatologists, conducted a modified Delphi consensus process to reach consensus on first-line therapy for AMH and whether therapeutic choices may change in different patient sub-groups. We reached consensus that most patients with acne and AMH should receive early and efficacious acne treatment with a topical retinoid and benzoyl peroxide. Therapies aimed at addressing AMH - including hydroquinone, azelaic acid, chemical

peel, or antioxidants - may also be considered to enhance the effect of the treatment regimen on acne and pigmentation. Chemical peels may be used as adjunctive or second-line therapy. This publication details the results of the Delphi process, reviews relevant literature in providing recommendations for AMH and discusses appropriate treatment options.

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Efficacy and safety of transplantation of autologous fat, platelet-rich plasma (PRP) and stromal vascular fraction (SVF) in the treatment of acne scar: Systematic review and meta-analysis. Han X, Ji D, Liu Y, Hu S. *Aesthetic Plast Surg.* 2023 Mar 7. doi: 10.1007/s00266-023-03295-1. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36881139/>

Background: The efficacy and safety evaluation of the transplantation of autologous fat, platelet-rich plasma (PRP) and stromal vascular fraction (SVF) in acne scars has not been completely unified. This article will analyze and process the data of the included studies through evidence-based medicine to evaluate the efficacy and safety of autologous fat grafting, PRP and SVF for acne scar treatment, so as to provide treatment basis and strategy for the clinical treatment of acne scars. **Methods:** We searched the PubMed, Embase, Cochrane Library databases, CNKI, Wanfang and CQVIP databases for studies published during the time between the establishment of the databases through October 2022. We included studies that report autologous fat grafting, SVF and PRP for patients with acne scars. We excluded repeated publication, researches without full text, incomplete information or inability to conduct data extraction and animal experiments, case report, reviews and systematic reviews. STATA 15.1 software was used to analyze the data. **Results:** The findings showed that fat grafting had excellent improvement, marked improvement, moderate improvement and mild improvement rates of 36%, 27%, 18% and 18%, respectively, PRP had excellent improvement, marked improvement, moderate improvement and mild improvement rates of 0%, 26%, 47% and 25%, respectively, and the SVF had excellent improvement, marked improvement, moderate improvement and mild improvement rates of 73%, 25%, 3% and 0%, respectively. Additionally, the pooled results showed that there was no significant difference between PRP treatment and pre-treatment in Goodman and Baron scale score. However, Shetty et al. reported that Goodman and Baron scale score after fat grafting was significantly lower than pre-treatment. The results also showed that after fat grafting treatment, incidence of pain after fat grafting was 70%. After PRP treatment, in addition to pain (17%), there is a higher probability of postinflammatory hyperpigmentation (17%) and hematoma (6%). After SVF treatment, the incidence of postinflammatory hyperpigmentation and hematoma was all 0%. **Conclusion:** Autologous fat grafting, PRP and SVF are effective for the treatment of acne scars, and the safety of autologous fat grafting, PRP and SVF is acceptable. Autologous fat grafting and SVF may be a better treatment for acne scars than PRP. However, this hypothesis still needs to be tested in the future large randomized controlled trials.

Incidence and factors associated with acne in transgender adolescents on testosterone: A retrospective cohort study. Chu L, Gold S, Harris C, et al. *Endocr Pract.* 2023 Mar 6;S1530-891X(23)00035-6. doi: 10.1016/j.eprac.2023.02.002. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36889581/>

Objective: This retrospective cohort study aimed to assess incidence and predictors of acne among transgender adolescents receiving testosterone. **Materials and methods:** We analyzed records of patients aged <18 years, assigned female at birth seen at Children's Healthcare of Atlanta Pediatric Endocrinology clinic for testosterone initiation between 1/1/2000-1/1/2019, with at least 1-year follow-up documented. Bivariable analyses to determine association of clinical and demographic factors with new acne diagnosis were calculated. **Results:** Of 60 patients, 46 (77%) did not have baseline acne. 25 of those 46 patients developed acne (54%) within 1-year of testosterone initiation. Overall incidence proportion was 70% at 2-years; patients who used progestin prior to or during follow up were more likely to develop acne than non-users (92% vs 33%, p<0.001). **Conclusion:** Transgender adolescents

starting testosterone, particularly those taking progestin, should be monitored for acne development, and treated proactively by hormone providers and dermatologists.

Efficacy and safety of low-dose oral isotretinoin monotherapy versus combined therapy with picosecond laser for the treatment of acne scars in Asian population. Xue H, Ye D, Huang S, et al. *Lasers Surg Med.* 2023 Mar 1. doi: 10.1002/lsm.23646. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/36856028/>

Purpose: Acne scars are common in patients with moderate to severe acne. Isotretinoin is the first-line treatment for those patients, but whether oral isotretinoin can improve acne scar is not clear. Picosecond lasers (Fxpico) has been reported to improve acne scars. In the present study, we evaluated the clinical efficacy of low-dose isotretinoin with or without Fxpico treatment for acne scars. Materials and methods: A total of 48 patients with acne scars were enrolled and were randomly assigned to receive low dose oral isotretinoin or not. For all the patients in both treatment groups, one side of face were randomly assigned to be treated with picosecond laser. Assessments, including photos, échelle d'évaluation clinique des cicatrices d'acné (ECCA) and Global Acne Grading System (GAGS) score, the number of lesions, melanin and erythema indexes, transepidermal water loss were assessed at 0, 1, 2, and 3 month. Side effects, Dermatology Life Quality Index (DLQI) and satisfaction were recorded before and after the study. Results: A total of 44 patients completed the study (24 received oral low dose isotretinoin and 20 did not). Low dose oral isotretinoin treated group showed significant improvement on ECCA (from 112.5 [50-180] to 105 [50-160]), GAGS score (from 12.6 ± 3.3 to 10.1 ± 3.0), the count of papules (from 4.3 ± 3.7 to 1.0 ± 1.5) than the blank group, and higher improvement were noticed after isotretinoin combined with Fxpico. All the side effects were temporary and tolerable, no adverse effects were observed. Higher DLQI and patients' satisfaction were achieved by oral isotretinoin alone and isotretinoin combined with Fxpico. Conclusions: This is the first paper showing the improvement of scars by early low dose-isotretinoin intervention with or without the combination of picosecond laser. Early intervention with oral low-dose isotretinoin is effective for the treatment and prevention of acne scars, the combined therapy with Fxpico can achieve better outcome.

Real-world case studies showing the effective use of azelaic acid in the treatment, and during the maintenance phase, of adult female acne patients. Layton AM, Dias da Rocha MA. *Clin Cosmet Investig Dermatol.* 2023 Feb 24;16:515-527. doi: 10.2147/CCID.S396023. eCollection 2023.

<https://pubmed.ncbi.nlm.nih.gov/36873659/>

Acne Vulgaris is a chronic inflammatory skin disease, and one of the most prevalent inflammatory dermatoses among teenagers, affecting more than >95% of boys and 85% of girls. Adult female acne (AFA) is a subtype of acne, pragmatically defined as affecting women over the age of 25. The clinical presentation of AFA may be distinguished from adolescent acne according to some key clinical and psychosocial characteristics. The etiopathogenic factors and the chronic clinical course that are implicated in AFA make management complex and challenging. A frequent tendency to relapse makes the requirement for maintenance therapy highly likely. Therefore, AFA typically requires a specific, tailored therapeutic approach. This paper presents six challenging case studies that demonstrate the efficacy of azelaic acid gel (AZA) in adult female acne. The six cases use AZA as monotherapy, as part of a combination regimen at treatment initiation, or as maintenance treatment (which is frequently required in this adult population). The positive outcomes achieved in this case series demonstrate that AZA can be efficacious, result in excellent patient satisfaction in mild to moderate adult female acne, and can be effective as a maintenance therapy.

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