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Industry News

Bactericidal, antibiotic acne topical treatment reduces inflammatory lesions. Healio Dermatology, May 13, 2019. <https://www.healio.com/dermatology/acne/news/online/%7B90cf8d07-e9b6-425e-8a71-8fff5722ee0e%7D/bactericidal-antibiotic-acne-topical-treatment-reduces-inflammatory-lesions>

Vyome Therapeutics reported results from two clinical trials of its anti-acne candidate VB-1953; the bactericidal, antibiotic topical gel kills sensitive and resistant strains of *C.acnes* infection, and has been shown to reduce inflammation, at the Society for Investigative Dermatology annual meeting in Chicago. “Data presented at [the Society for Investigative Dermatology meeting] demonstrated that VB-1953 was not only capable of significantly reducing inflammatory lesions in moderate to severe acne, but also showed the ability to reduce inflammatory lesions of those patients who are non-responders or are resistant to the first-line antibiotic treatment, clindamycin,” according to the release. In a proof of concept, double-blind, vehicle-controlled randomized study, topical VB-1953 2% gel was evaluated over 12 weeks in adult patients with moderate to severe facial acne vulgaris. The researchers found that with 12 weeks of twice-daily treatment a significant reduction of 71.4% in inflammatory lesions ($P < .05$) was reported. Additionally, in as early as 8 weeks after treatment, researchers reported an approximate 60% reduction in inflammatory lesions ($P < .01$ vs. vehicle). In the other clinical trial, Vyome evaluated VB-1953 in antibiotic-resistant *P. acnes* strains. Treatment twice daily resulted in a reduction in absolute inflammatory lesions from a mean baseline of 34.4 to 16.7 lesions at week 12 ($P < .001$). Resistant bacteria were reduced by a mean of 94.3% ($P < .05$) within 4 weeks of treatment.

New Medical Research

Formulation, characterization, and in vitro testing of azelaic acid ethosome-based cream against Propionibacterium acnes for the treatment of acne. Apriani EF, Rosana Y, Iskandarsyah I. J Adv Pharm Technol Res. 2019 Apr-Jun;10(2):75-80. doi: 10.4103/japtr.JAPTR_289_18. <https://www.ncbi.nlm.nih.gov/pubmed/31041186>

Azelaic acid is an antiacne drug by inhibiting thioredoxin reductase enzyme of *Propionibacterium acnes* (*P. acnes*) that affects the inhibition of bacterial DNA synthesis which occurs in the cytoplasm. Azelaic acid must penetrate through the stratum corneum to the sebaceous tissue and into cytoplasm by passing through thick peptidoglycan of *P. acnes*. Thus, it is necessary to increase the penetration of azelaic acid that formulated based ethosome. This study using thin-layer hydration method forms an ethosomal suspension with variations of concentration ethanol (30%, 35%, and 40%). Antibacterial activity was conducted using broth dilution method to determine minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). The antibacterial activity of azelaic acid ethosome cream based was compared with the marketed cream (Zelface® cream). Azelaic acid ethosome with 35% ethanol has given best result with entrapment efficiency of $94.48\% \pm 0.14\%$. Antibacterial activity to *P. acnes* showed that azelaic acid ethosome-based cream was given better activity than marketed cream (Zelface® cream). The value of MIC and MBC of azelaic acid ethosome-based cream was 250 $\mu\text{g/ml}$ while the marketed cream (Zelface® cream) was shown MIC of 250 $\mu\text{g/ml}$ and MBC of 500 $\mu\text{g/ml}$. This study proved that the azelaic acid ethosome-based cream has better antibacterial activity.

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Dual-plane hyaluronic acid treatment for atrophic acne scars. Artzi O, Cohen S, Koren A, et al. *J Cosmet Dermatol.* 2019 May 10. doi: 10.1111/jocd.12991. [Epub ahead of print]

<https://www.ncbi.nlm.nih.gov/pubmed/31074185>

Background: Acne is a common condition that affects up to 80% of all adolescents. Scarring may affect some 95% as a function of severity and delay before treatment. The pathogenesis includes enzymatic degradation of collagen fibers and subcutaneous fat. Objective: This study aimed to treat atrophic acne scars using the Dual-Plane injection of Hyaluronic Acid. Methods: A total of 12 patients with moderate-to-severe atrophic acne scars were treated with a novel NAHYCO™ based Hyaluronic Acid filler, using a dual-plane technique for two treatment sessions at a 4-week interval. Results were objectively assessed by two blinded Dermatologists and subjectively evaluated by the patients themselves. Results: A total of 8 out of the 12 patients reported moderate improvement, two indicated marked improvement and two rated minimal improvement. Dermatologists' mean global evaluation score was 2.5 ± 0.43 . Limitations: The small sample size and regional nature of a single-center study. Nevertheless, both the expert dermatologists' and the patients' evaluations of standardized high-resolution medical photographs were consistent, suggesting that this inherent bias was negligible. Conclusion: The treatment led to impressive improvement in the depth of the scars, suggesting that this technique can result in safe and rapid amelioration of atrophic acne scars in only two sessions.

Factors affecting adherence and patient satisfaction with treatment: a cross sectional study of 500 patients with acne vulgaris. Hayran Y, İncel Uysal P, Öktem A, et al. *J Dermatolog Treat.* 2019 May 10:1-22. doi: 10.1080/09546634.2019.1618434. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31076012>

Background: Acne Vulgaris is a chronic inflammatory disease that requires long-term treatment. Adherence to treatment is a problem in chronic diseases and may affect treatment outcomes. Objective: We aim to investigate treatment adherence and satisfaction of patients with acne and identify independent factors that affect them. Methods: Five hundred patients with acne were included in this cross-sectional study. Demographic and clinical characteristics of the patients were recorded. Severity of acne was assessed using the Investigator Global Assessment (IGA) scale, and a 5-point Likert scale was used to assess Patients' satisfaction and adherence. Results: Adherence to treatment was poor in 64.4% of the patients. Multivariate logistic regression analysis showed that using oral isotretinoin (OR: 4.1, 95% CI 2.44-6.92, $p < 0.001$) and satisfaction with treatment (OR: 2.1, 95% CI: 1.31-3.43, $p = 0.002$) were independent factors that affect adherence in patients. Fifty-one point eight percent of the patients were satisfied with their treatments and treatment satisfaction was higher in females (OR: 2.2, 95% CI 1.3-3.8, $p = 0.004$) and patients using oral isotretinoin (OR: 14.8, 95% CI 9.4-23.2, $p < 0.001$). Conclusions: Treatment adherence is poor among patients with acne. Identifying the factor that affects adherence may help the dermatologist recognize non-adherent patients and develop strategies to improve adherence.

Changing our microbiome: probiotics in dermatology. Yu Y, Dunaway S, Champer J, et al. *Br J Dermatol.* 2019 May 3. doi: 10.1111/bjd.18088. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31049923>

Background: Commensal bacteria are a major factor in human health and disease pathogenesis. Interest has recently expanded beyond the gastrointestinal microflora to include the skin microbiome and its impact on various skin diseases. Objectives: Here, we present the current data reviewing the role of the microbiome in dermatology, considering both the gut and skin microflora. Our objective was to evaluate whether the clinical data support the utility of oral and topical probiotics for certain dermatologic diseases. Methods: The PubMed and ClinicalTrials.gov databases were searched for basic science, translational research, and clinical studies that investigated the

differences in the cutaneous microbiome and the impact of probiotics in patients with atopic dermatitis, acne vulgaris, psoriasis, chronic wounds, seborrheic dermatitis, and cutaneous neoplasms. Results: Few clinical trials exist that explore the utility of probiotics for the prevention and treatment of dermatologic diseases, with the exception of atopic dermatitis. Most studies investigated oral probiotic interventions, and of those utilizing topical probiotics, few included skin commensals. In general, the available clinical trials yielded positive results with improvement of the skin conditions after probiotic intervention. Conclusions: Oral and topical probiotics appear to be effective for the treatment of certain inflammatory skin diseases and demonstrate a promising role in wound healing and skin cancer. However, more studies are needed to confirm these results.

Metformin as an adjunct therapy for the treatment of moderate to severe acne vulgaris: a randomized open-labelled study. Robinson S, Kwan Z, Tang MM. *Dermatol Ther.* 2019 May 1:e12953. doi: 10.1111/dth.12953. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31044492>

Background: Insulin, insulin-like growth factor-1 (IGF-1) and essential amino acids activate the mechanistic target of rapamycin complex 1 (mTORC1), the main nutrient-sensitive kinase. Metformin, through inhibition of mTORC1 may improve acne. Methods: A 12-week, randomized, open-labeled study evaluated the efficacy and safety of metformin as an adjunct for moderate to severe facial acne. In total, 84 patients received either oral tetracycline 250 mg bd and topical benzoyl peroxide 2.5% with or without metformin 850 mg daily. Evaluations constituted lesion counts, the Cardiff Acne Disability Index (CADI), metabolic parameters and treatment success rate (Investigators Global Assessment score of 0 or 1 or improvement of two grades). Results: Treatment success rates were higher in the metformin group (66.7% vs 43.2%; p=0.04). The mean percentage reduction from baseline in total lesion counts at week 12 was greater in the metformin group (71.4% vs 65.3%; p=0.278). The CADI scores showed a greater mean reduction in the metformin group (4.82 vs 4.22; p=0.451). Metformin was equally efficacious in improving acne in lean and overweight subjects. Gastrointestinal symptoms were noted in 31.7% of subjects on metformin. Conclusion: This study presents favorable data for metformin as an adjunct for acne treatment. Further randomized placebo-controlled studies are required.

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Quantification and in silico toxicity assessment of tazarotene and its impurities for a quality and safe drug product development. Nagulakonda NNM, Ananthula RS, Krishnamurthy T, et al. *J Chromatogr Sci.* 2019 Apr 30. pii: bmz037. doi: 10.1093/chromsci/bmz037. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31037297>

Tazarotene is internationally accepted common name for ethyl 6-[(4,4-dimethylthiochroman-6-yl)ethynyl]nicotinate. It is a synthetic retinoid used for the topical treatment of mild to moderate plaque psoriasis, acne vulgaris and photo aging. To ensure the quality of drug product and drug substance, a LC-MS compatible UHPLC method was developed for quantification of drug and its related substances. Stationary phase with fused core particle technology is used for the separation of impurities. Limit of quantification and limit of detection of the method are 0.1 and 0.03%, respectively. Precision of the method for Tazarotene and all its related substances is less than 2.2% RSD. The correlation coefficient is >0.999. Accuracy of method is ranged from 95.3% to 107.0%. Application of this method in stability analysis has been demonstrated by analyzing stressed samples. Experimental design is used for the verification of robustness of the method. To ensure the safety, an in silico toxicity of the drug and its related substances were determined using TOPKAT and DEREK toxicity predictions Both UHPLC and in silico methods were validated as per the ICH Q2 and ICH M7 guidelines, which will enable a rapid product development of Tazarotene topical formulations while ensuring the safety and quality of product.

Successful treatment of facial vascular skin diseases with a 577-nm pro-yellow laser. Mohamed EM, Mohamed Tawfik K, Hassan Ahmad W. *J Cosmet Dermatol.* 2019 Apr 29. doi: 10.1111/jocd.12963. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31033204>

Background: Treatment of vascular skin diseases is one of the most important indications of the laser. Aims: To evaluate the effectiveness of 577-nm pro-yellow laser in the treatment of some vascular skin diseases. Patients/methods: Ninety-five patients with vascular skin diseases were included in this prospective monocentric study. They were classified into: port-wine stain birthmarks (n = 37), papulopustular rosacea (n = 20), facial telangiectasia (n = 16), and facial erythema (n = 22). All participants received a monthly session of 577-nm pro-yellow laser. Follow-up was done by comparing the photographs before and at every follow-up visit. Results: At the final visit, there was a significant improvement (>50%) occurred in 24/37 (64.82%), 12/20 (60%), 10/16 (62.5%), and 19/22 (86.3%) cases and poor response occurred in 6/37 (16.2%), 2/20 (10%), 2/16 (12.5%), and 0/22 cases after a mean number of sessions 7.76 ± 2.28 , 3.1 ± 1.8 , 3.63 ± 1.12 , and 1.8 ± 0.85 in port-wine stain, rosacea-, facial telangiectasia-, and facial erythema-treated groups, respectively. Transient irritation and erythema during the session were the only complications reported in the study. Conclusion: Facial port-wine stains, rosacea, telangiectasia, and erythema can be successfully treated with a single pass of 577-nm pro-yellow laser with a minimal side effect. Facial erythema showed the highest degree of success with the least number of sessions, while more sessions needed for the treatment of port-wine stain.

The evolution of healthy skin to acne lesions: a longitudinal, in vivo evaluation with reflectance confocal microscopy and optical coherence tomography. Manfredini M, Bettoli V, Sacripanti G, et al. *J Eur Acad Dermatol Venereol.* 2019 Apr 26. doi: 10.1111/jdv.15641. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31025401>

Background: Comedogenesis is defined as the process of the development of a new comedo, which is of great importance for the understanding of acne. Objective: To evaluate the formation and evolution of acne lesions from clinically unaffected skin of patients with mild-moderate acne to characterize the morphological changes and natural resolution by means of in vivo reflectance confocal microscopy (RCM) and dynamic optical coherence tomography (D-OCT). Methods: Ten patients with mild-moderate acne, not assuming any topical or systemic therapy, comprised between 12 and 30 years of age, were recruited. A target area of 4 × 4 mm of the face, without acne lesions at baseline, was selected. A set of standardized clinical pictures, RCM and D-OCT images were acquired weekly for 6 weeks and evaluated. Results: Seventy full sets of clinical, RCM and D-OCT images were analysed. The appearance of acne lesion is preceded by an increase of large bright follicles in the area corresponding to infundibular keratinization, followed by increment of inflammation parameter, such as increased of small bright cells upon RCM and vascular network upon D-OCT, which return to normal after the resolution of acute inflammation. Conclusion: Acne skin dynamics is complex and seems characterized by the early increase in the number of dysmorphic pilosebaceous units and the hyperkeratinization of the acroinfundibulum of the pilosebaceous duct prior to the occurrence of inflammatory events around the follicle. The processes of hyperkeratinization and inflammatory phenomena may generate a pathologic vicious cycle, which characterizes acne through progressive worsening and a self-sustainment mechanism.

Efficacy and safety of intense pulsed light in the treatment of inflammatory acne vulgaris with a novel filter. Chen S, Wang Y, Ren J, et al. *J Cosmet Laser Ther.* 2019 Apr 25:1-5. doi: 10.1080/14764172.2019.1605450. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31023099>

Acne vulgaris is one of the most common skin diseases affecting young people. Intense pulsed light (IPL) has become a well-recognized method in the treatment of acne vulgaris. We aim evaluate the clinical efficacy and safety of a novel IPL filter at wavelength of 400-600 nm and 800-1,200 nm in the treatment of inflammatory acne lesions. Twenty-one patients with Pillsbury I-III facial acne vulgaris between July 2017 and January 2018 were enrolled in this prospective clinical study. Five sessions of IPL treatment were administered to the subjects at 4-week interval. Final assessment was performed 1 month after the final treatment. One-month posttreatment, over 75% subjects exhibited excellent or good response. Of the Pillsbury I-II patients, the effective rate reached 88.24%. The inflammatory lesions were dramatically decreased (25.23 ± 2.76 versus 14.01 ± 1.98) and statistically evident ($P = .031$). According to Hayashi assessment of acne severity, there was a significant improvement at follow-up visit ($P = .022$). Moreover, patients reported significant improvements in self-evaluation. The novel IPL filter at wavelength of 400-600 nm and 800-1,200 nm provides an effective option to treatment of inflammatory acne lesions, especially for Pillsbury I-II acne patients, with minimal reversible side effects, such as transient post-inflammatory pigmentation.

Serum IgG4 elevation in SAPHO syndrome: does it unmask a disease activity marker? Li C, Xiang Y, Wu X, et al. Clin Exp Rheumatol. 2019 Apr 16. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31025928>

Objectives: SAPHO syndrome is a rare inflammatory disorder with multiple phenotypes, including synovitis, acne, pustulosis, hyperostosis, and osteitis. IgG4 is a subclass of immunoglobulin G, and the elevation of IgG4 has been found in different autoimmune diseases. In the present study, we explored the clinical significance of serum IgG4 levels in patients with SAPHO syndrome. Methods: Fifty-two patients who met the classification criteria of SAPHO syndrome were included in this study. Clinical data and disease activity markers were collected including erythrocyte sedimentation rate (ESR), high sensitivity C-reactive protein (hsCRP), pain visual analogue scale (VAS), Bath Ankylosing Spondylitis Metrology Index (BASMI), Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), Bath Ankylosing Spondylitis Functional Index (BASFI) and Ankylosing Spondylitis Disease Activity Score (ASDAS). Serum immunoglobulin (IgA, IgM, and IgG) and IgG subclass (IgG1, IgG2, IgG3, and IgG4) levels were determined using the immunonephelometric assay. Results: Raised serum IgG4 levels (>1400 mg/dL) were detected in 23% (12/52) of patients. Patients with elevated sIgG4 levels had significantly higher pain VAS (5.42 ± 2.76 vs. 3.08 ± 1.78 , $p=0.02$), BASMI (1.80 ± 1.64 vs. 0.38 ± 0.94 , $p=0.03$) and ASDAS (3.20 ± 0.65 vs. 1.74 ± 0.58 , $p<0.001$) levels compared with patients with normal sIgG4 levels. This difference was also observed for ESR (38.2 vs. 22.2 mm/h, $p=0.01$) and serum CRP (21.0 vs. 2.2 mg/L, $p=0.04$) levels, which also positively correlated with sIgG4 levels. We also included 4 patients whose IgG4 levels decreased and correlated with the decrease in hsCRP and ESR levels after treatment. Conclusions: Elevated sIgG4 levels are common in patients with SAPHO syndrome and are associated with high disease activity. Further investigations are needed for this phenomenon.

The effects of oral isotretinoin in women with acne and polycystic ovary syndrome. Acmaz G, Cinar L, Acmaz B, et al. Biomed Res Int. 2019 Apr 7;2019:2513067. doi: 10.1155/2019/2513067. eCollection 2019. <https://www.ncbi.nlm.nih.gov/pubmed/31080813>

Introduction: Many patients who were diagnosed as polycystic ovary syndrome- (PCOS-) related acne were not capable of sustaining or beginning oral contraceptive pills (OCPs) due to pill scaring, contraindications of OCP use, migraine, or smoking. In this situation, oral isotretinoin treatment may become an important option for PCOS-related acne. The aim of the study was to determine the effects of isotretinoin treatment on PCOS patients who were complicated with severe cystic acne. Materials and methods: This study consisted of 40 female patients diagnosed as PCOS complicated with severe cystic acne. These patients were not eligible candidates for OCP use due to

migraine, thrombophilia, heavy smoking, or pill scare. To establish baseline values of hormone levels, on days 2-5 of the menstrual cycle, venous blood samples were obtained. Moreover, Modified Ferriman-Gallwey (mFG) score, acne score (AS), follicle count, and bilateral ovarian volumes were evaluated both before and after isotretinoin treatment. Results: Isotretinoin treatment significantly decreased Ferriman-Gallwey score, free testosterone, insulin level, hemoglobin level, acne score, and ovarian volume. Increased triglyceride and cholesterol levels were detected after treatment. Conclusion: Isotretinoin treatment may have beneficial effects on free testosterone, insulin, acne score, and Ferriman-Gallwey score. Solely isotretinoin administration may supply adequate healing in PCOS patients' symptoms complicated with severe cystic acne who is not eligible candidates for OCP use. This trial is registered with Clinicaltrials.gov NCT02855138.

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Clinical Reviews

Dermatologic conditions in transgender populations. Yeung H, Kahn B, Ly BC, Tangpricha V. *Endocrinol Metab Clin North Am.* 2019 Jun;48(2):429-440. doi: 10.1016/j.ecl.2019.01.005.

<https://www.ncbi.nlm.nih.gov/pubmed/31027550>

Transgender persons receiving gender-affirming hormone therapy and procedures may face specific skin conditions. Skin diseases in transgender patients often are underdiagnosed and underrecognized despite their important impact on quality of life and mental health. This article discusses pathophysiology, diagnosis, and treatment of common skin diseases in the transgender populations. For transmasculine patients, conditions include acne vulgaris and male pattern hair loss. For transfeminine patients, conditions include hirsutism, pseudofolliculitis barbae, and melasma. Postprocedural keloids and other cutaneous complications are discussed. Unique aspects of skin health in transgender persons should be considered in the context of multidisciplinary gender-affirming care.

Is there a role for antiandrogen therapy for hidradenitis suppurativa? a systematic review of published data. Nikolakis G, Kyrgidis A, Zouboulis CC. *Am J Clin Dermatol.* 2019 May 9. doi: 10.1007/s40257-019-00442-w. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31073704>

Background: Hidradenitis suppurativa/acne inversa is a disease with deep-seated chronic painful nodules, abscesses, and draining sinus tracts, which manifests on the apocrine gland-rich skin areas of the body. Observational findings demonstrate that the disease usually appears after puberty, exhibits pre-menstrual flares in women, improves in pregnancy, and worsens post-partum, which indicates a role of hormones and particularly of androgens in its pathophysiology. Because increased androgen levels in serum have not been widely reported, an end-organ androgen hypersensitivity has been postulated. Objective: The aim of this systematic review was to identify and present evidence for antiandrogen therapeutic options for the treatment of hidradenitis suppurativa/acne inversa. Methods: A literature search was conducted in different medical electronic databases using the keywords "hidradenitis", "suppurativa", "acne inversa", and "antiandrogen" on 1 December 2018. The main therapeutic options were subsequently used as separate keywords with the disease terms in a separate search. Results: The main therapeutic options yielded were cyproterone acetate, spironolactone, finasteride, and metformin. One randomized controlled crossover trial and seven case series were identified following use of a standard extraction form for eligibility. Conclusion: The existing studies do not allow a robust evidence-based recommendation for the use of

antiandrogens in the treatment of hidradenitis suppurativa/acne inversa. Further randomized controlled trials are needed to define the role of hormonal treatment as an alternative or concomitant therapy together with antibiotics or biologics.

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Microneedling and PRP for acne scars: A new tool in our arsenal. Schoenberg E, O'Connor M, Wang JV, et al. *J Cosmet Dermatol.* 2019 May 9. doi: 10.1111/jocd.12988. [Epub ahead of print]

<https://www.ncbi.nlm.nih.gov/pubmed/31070298>

A common complication of acne vulgaris is clinically significant scarring, which can greatly impact patient quality of life. While treatment options have included microneedling, the recent addition of platelet-rich plasma (PRP) to this regimen has led to an increased popularity of combination treatment. Here, we offer backgrounds on microneedling and PRP therapies and review the literature on combination treatment for acne scars.

Hidradenitis suppurativa and risk of suicide - systematic review and meta-analysis. Phan K, Loya A, Ramachandran V, Smith SD. *J Dermatolog Treat.* 2019 May 7:1-8. doi: 10.1080/09546634.2019.1613483. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31063002>

The painful and chronic nature of hidradenitis suppurativa (HS) and associated stigma leads to detrimental impact on patients' quality of life. There is increasing evidence that HS is associated with various psychiatric comorbidities including depression, anxiety disorders and psychoses. However, few studies have investigated the relationship between HS and suicide risk. We performed a systematic review and meta-analysis to determine whether HS patients are at elevated risk of suicide compared to controls. 1128 studies were identified from the systematic literature search. After removal of duplicates, title and abstract screening, and application of inclusion and exclusion criteria, there were 4 articles comprised of 86,151 HS cases compared with 114,579,054 controls. From unadjusted meta-analysis, we found an association between HS and suicide (OR 2.24, 95% CI 1.35-3.71, $P=0.002$) (Figure 1). There was heterogeneity noted ($I^2=98\%$). Meta-analysis with adjusted effect sizes was also performed, and we found an association between HS and suicides compared to controls (OR 2.11, 95% CI 1.43-3.12, $P=0.0002$, $I^2=91\%$). Our systematic review and meta-analysis findings demonstrate the profound effect HS can have on mental health. Clinicians should be aware of psychiatric comorbidities in this population. The psychosocial burden of HS may lend to its association with suicide.

Pharmacological development in hidradenitis suppurativa. Matusiak Ł, Jemec GB, Szepletowski JC. *Curr Opin Pharmacol.* 2019 May 7;46:65-72. doi: 10.1016/j.coph.2019.04.006. [Epub ahead of print]

<https://www.ncbi.nlm.nih.gov/pubmed/31075754>

Hidradenitis suppurativa (HS) is a chronic, inflammatory, debilitating disease of a relapsing nature which presents with nodules, abscesses, and suppurating lesions of intertriginous areas of the skin. Within recent years, there has been significant progress in terms of the treatment of HS, nevertheless, an unmet need of treatment exists and effective therapy remains a serious challenge. The current treatment strategies are focused on known pathomechanisms underlying and responsible for development of HS lesions, including hyperkeratinization and occlusion of pilosebaceous unit, dysbiosis and the extensive, chronic inflammation. Several cytokines (i.e. TNF- α , IL-1, IL-17, and IL-23) seem to be involved in HS pathogenesis, and their blockade appears as a rational therapeutic

approach. So far TNF inhibition with adalimumab remains the only EMA-approved/FDA-approved agent in HS treatment and should be consequently considered first. Other drugs, however, play an increasing role in off-label therapy. In recent years, new phase II and III trials for HS management have appeared aimed at inhibition of specific targetable inflammatory pathways identified in HS. Thus, several new biologics are being investigated, including MABp1 (bermekimab), CJM112, bimekizumab, guselkumab, secukinumab, and IFX-1.

Silver-coated textiles in hidradenitis suppurativa: a case report. Morand M, Hatami A. SAGE Open Med Case Rep. 2019 May 2;7:2050313X19845212. doi: 10.1177/2050313X19845212. eCollection 2019. <https://www.ncbi.nlm.nih.gov/pubmed/31080599>

Hidradenitis suppurativa is a chronic and debilitating skin disease of apocrine gland-bearing areas. The mainstay of treatment usually includes topical and systemic antibiotics. These agents can be used as monotherapy or combination therapy. The therapeutic role of functional textiles with antimicrobial activity has been recently emerging in the treatment of other skin diseases such as atopic dermatitis and epidermolysis bullosa. The pathologic processes involved in the development of atopic dermatitis and hidradenitis suppurativa are still incompletely understood, but these two diseases share some similarities including bacterial proliferation and chronic inflammation. We report the case of a 14-year-old boy with hidradenitis suppurativa that has been successfully treated with silver-coated textiles. To the best of our knowledge, this article is the first to report the benefits of silver-coated textiles in the treatment of hidradenitis suppurativa.

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Quality of life measurement in hidradenitis suppurativa: position statement of the European Academy of Dermatology and Venereology task forces on Quality of Life and Patient-Oriented Outcomes and Acne, Rosacea and Hidradenitis Suppurativa. Chernyshov PV, Zouboulis CC, Tomas-Aragones L, et al. J Eur Acad Dermatol Venereol. 2019 Apr 29. doi: 10.1111/jdv.15519. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31037773>

This paper is organized jointly by the European Academy of Dermatology and Venereology (EADV) Task Force (TF) on Quality of Life (QoL) and Patient-Oriented Outcomes and the EADV TF on acne, rosacea and hidradenitis suppurativa (ARHS). The purpose of this paper was to present current knowledge about QoL assessment in HS, including data on HS-specific health-related (HR) QoL instruments and HRQoL changes in clinical trials, and to make practical recommendations concerning the assessment of QoL in people with HS. HS results in significant quimp that is higher than in most other chronic skin diseases. HS impact in published studies was assessed predominantly (84% of studies) by the Dermatology Life Quality Index (DLQI). There is a lack of high-quality clinical trials in HS patients where HRQoL instruments have been used as outcome measures. One double-blind randomized placebo-controlled trial on infliximab with low number of participants reported significantly better HRQoL improvement in the treatment group than in the placebo group. Well-designed clinical studies in HS patients to compare different treatment methods, including surgical methods and assessing long-term effects, are needed. Because of lack of sufficient validation, the Task Forces are not at present able to recommend existing HS-specific HRQoL instruments for use in clinical studies. The EADV TFs recommend the dermatology specific DLQI questionnaire for use in HS patients. The EADV TFs encourage the further development, validation and use of other HS-specific, dermatology-specific and generic instruments but such use should be based on the principles presented in the previous publications of the EADV TF on QoL and Patient-Oriented Outcomes.

A narrative review of the definition of "flare" in hidradenitis suppurativa. Kirby J, Moore B, Leiphart P, et al. *Br J Dermatol*. 2019 Apr 26. doi: 10.1111/bjd.18035. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31025310>

Background: Hidradenitis suppurativa (HS) is a chronic, inflammatory condition that can have periodic worsening or flares. Measurement of flare is important because it can inform treatment efficacy; however, it is unclear how HS flare should be defined. Objective: This study reviewed the literature for definitions of HS flare. Methods: PubMed MEDLINE online database was searched on 10 January 2018 and repeated on 8 December 2018 for new publications. Titles and abstracts were screened for inclusion. Subsequently, full-articles were screened for inclusion. Papers were included if the publication was a systematic review, clinical trial, cohort study, case report/series, or cross-sectional study. Studies were excluded if it was a journalistic review, did not discuss clinical findings of HS or did not use the words 'flare', 'exacerbation', 'relapse' or 'recurrence'. Results: Two hundred and seventy papers were identified and 149 fulfilled study criteria. Of these, 27 (18.12%) included the term 'flare' and 16 (10.74%) included the term exacerbation. Two of the 27 papers (7.4%) defined the term flare and both included patient-report of changes in symptoms or signs. One of 16 papers (6.25%) defined exacerbation, which was taken as one new HS lesion. The terms 'recurrence' and 'relapse' were more apt to be defined (13.0%, 13/100 and 13.63%, 6/44, respectively). Discussion: The lack of a specific and measurable definition of HS flare is a barrier to assessment of this important outcome. Once a specific and measurable definition is established, then validated and reliable measures of HS flare can be incorporated into future studies.

Photobiomodulation as potential novel third line tool for non-invasive treatment of hidradenitis suppurativa. Tricarico PM, Zupin L, Ottaviani G, et al. *G Ital Dermatol Venereol*. 2019 Apr 23. doi: 10.23736/S0392-0488.19.06247-3. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31042851>

Hidradenitis Suppurativa (HS) is a severe inflammatory pathology of the skin characterized by chronic recurrent inflamed lesions, nodules, sinus tracts and abscesses usually manifests after puberty, which involves scalp, neck, axillae, perineum and infra-mammary areas. Nowadays treatment options range from short or long courses of antibiotics, anti-inflammatory and biologic drugs, to surgery. Other suggested treatments consider the employment of laser devices, mainly microsurgical lasers (such as CO2 and intense pulsed lasers) and photodynamic therapy. This review explores the potential use of photobiomodulation (PBM), already used for the treatment of other skin conditions, such as acne, hypertrophic scars, wrinkles, and burns, as potential novel therapy for HS. PBM has been reported to have beneficial effects on promoting wound healing, angiogenesis, vasodilation, and relieving from pain and inflammation, as recently demonstrated in an in vitro model mimicking HS disease. In addition, PBM, specifically set at the blue wavelength, has been recently reported as exerting an anti-bacterial activity. Therefore, considering all these PBM features especially its ability to decrease pain and inflammation and to lead to faster wound healing, thus improving patients' quality of life, we hypothesize its employment as adjuvant third line treatment for the management of HS both in young and adult patients.

Acne antibiotic prescription pattern in Colombia. Pérez Cely HC, Casadiego Rincón EJ, Castellanos Lorduy HJ. *G Ital Dermatol Venereol*. 2019 Apr 23. doi: 10.23736/S0392-0488.19.06346-6. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/31042859>

Background: Bacterial resistance to antibiotics has been growing exponentially. Acne is the most common outpatient complaint in dermatology and involve the use of antibiotics for treatment. Methods: We conducted a drug utilization

study, with a retrospective and descriptive design, in order to evaluate the antibiotic prescription pattern for acne vulgaris patients who were cared for the first time in 2015, and were prescribed with an antibiotic, no matter if it was topical, oral or both, and compared it against the Colombian clinical practice guidelines valid for that year in our country. Results: 369 patients were randomly collected, 221 women and 148 men. There was a correct adherence to guidelines in election of an antibiotic, its dosage, and time of use in 51.7%, 94.85%, and 76.1%, respectively. 37.1% of patients has been correctly prescribed globally, taking into consideration the three previously described variables. Conclusions: A non-adherent antibiotic prescription was documented for less than half of the patients; In almost a quarter of the patients it was not prescribed for the right time and in most patients the correct dose was chosen. It is important to know the prescription pattern as it allows decisions to be made that lead to an adequate use of antibiotics, and thus prevent the development of antimicrobial resistance.

Infantile Acne. Poole CN, McNair V. SourceStatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019, Apr 17. <https://www.ncbi.nlm.nih.gov/pubmed/31082168>

Acne vulgaris, a common dermatologic condition, is defined by the presence of comedones. Essentially benign in nature, acne vulgaris can, however, result in permanent disfigurement and significant psychosocial sequelae. Although the condition is by far the most prevalent among the adolescent patient population, it can and does occur at any age, including infancy. The outpatient management of pediatric acne, in particular, can be challenging to even the most experienced clinicians, which stems from several issues. First, one must actively consider an extensive list of differential diagnoses. Second, establishing a diagnosis of acne vulgaris in a pediatric patient can simply represent the initial step in the ultimate diagnosis of a more serious underlying condition. Moreover, even a confirmed case of uncomplicated pediatric acne requires thoughtful management involving awareness of potential treatment side effects and effective engagement of the patient, and often the caregiver as well. Pediatric acne subdivides into four subgroups based on the age of onset - neonatal acne, infantile acne, mid-childhood acne, and preadolescent acne. Infantile acne presents anytime between approximately 6 weeks and 12 months of age and displays a male predominance. In addition to both closed and open comedones, morphological findings often include inflamed papules, pustules, nodules, and cysts. Lesions are usually distributed to the skin of the facial region but can involve the chest and back as well. In general, most patients diagnosed with infantile acne have a moderate course at best requiring no treatment, resolving within 6 to 12 months of initial onset. However, some cases can cause scarring and be severe enough to warrant the initiation of medication. Children with infantile acne are at higher risk of developing severe acne during adolescence.

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