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Title: American Academy of Dermatology Guidelines of care for the management of acne vulgaris: Executive summary

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The American Academy of Dermatology (AAD) strives to produce clinical guidelines that reflect the best available evidence supplemented with the judgment of expert clinicians. Significant efforts are taken to minimize the potential for conflicts of interest to influence guideline content. The management of conflict of interest for this guideline complies with the Council of Medical Specialty Societies' Code of Interactions with Companies. Funding of guideline production by medical or pharmaceutical entities is prohibited, full disclosure is obtained and evaluated for all guideline contributors throughout the guideline development process, and recusal is used to manage identified relationships. The AAD conflict of interest policy summary may be viewed at www.aad.org.

DISCLAIMER

Adherence to these guidelines will not ensure successful treatment in every situation. Furthermore, these guidelines should not be interpreted as setting a standard of care or be deemed inclusive of all proper methods of care, nor exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific therapy must be made by the physician and the patient in light of all the circumstances presented by the individual patient, and the known variability and biologic behavior of the disease. This guideline reflects the best available data at the time the guideline was prepared. The results of future studies may require revisions to the recommendations in this guideline to reflect new data.

SUMMARY

Acne vulgaris commonly affects adults, adolescents, and pre-adolescents aged 9 years and above and imposes high global burden among skin diseases. These clinical guidelines for the management of acne vulgaris update the American Academy of Dermatology's 2016 guidelines[1] and are intended for clinicians who manage patients with acne and researchers in identifying future research directions.

Our multidisciplinary workgroup employed best practices for guideline development, including a systematic review of the evidence and application of the Grading of Recommendations, Assessment, Development, and Evaluation approach for assessing the certainty of the evidence and formulating and grading recommendations. This evidence review covered topics on acne grading and classification, laboratory testing, the use of topical agents, systemic antibiotics, hormonal agents, oral isotretinoin, physical modalities, complementary and alternative medicine, and dietary and environmental factors. This approach resulted in 18 evidence-based recommendations and 5 good practice statements for the management of acne in adults, adolescents, and preadolescents aged 9 years or above (**Figure I** and **Table I**).

While there is no single universally adopted acne grading or classification system, consistent use of acne grading or classification scales, such as the investigator/physician global assessment, may guide therapeutic decisions in clinical practice. For topical treatments often used for mild-to-moderate acne, current evidence supported strong recommendations for topical benzoyl peroxide, retinoids, and/or antibiotics, as well as their fixed-dose combinations. Using topical therapies combining multiple mechanisms of action is recommended as good clinical practice. Conditional recommendations are made for the use of topical clascoterone, salicylic acid, and azelaic acid. For systemic treatments often used for moderate-to-severe acne, oral doxycycline is strongly recommended. Limiting systemic antibiotic use and combining systemic antibiotics with concomitant benzoyl peroxide and other topical therapy are recommended as good clinical practice. Conditional recommendations are made for oral minocycline, sarecycline, combination contraceptive pills, and spironolactone. For patients with larger acne papules or nodules, adjuvant intralesional corticosteroid injections are recommended as good clinical practice. Oral isotretinoin is strongly recommended for severe acne, acne causing psychosocial burden or scarring, or acne failing standard treatment with oral or topical therapy. Conditional recommendations are made for traditional daily dosing over intermittent dosing of isotretinoin, and for either standard isotretinoin or lidose-isotretinoin. Given the diversity of treatment options for acne, shared-decision making is important

to individualize care to each patient and to balance trade-offs between risks and benefits of treatment options.

This review identified evidence gaps on the use of microbiology and endocrinology testing in acne, the use of systemic antibiotics beyond tetracycline-class antibiotics, physical modalities, complementary and alternative therapies, dietary interventions, and cost-effectiveness of acne treatments. Randomized controlled trials with long-term follow up and comparative effectiveness research are necessary to examine and compare patient-centered acne treatment outcomes. Additional research is needed on optimizing value of laboratory monitoring for patients receiving spironolactone and isotretinoin and on tailoring acne management in diverse populations (e.g., pregnancy, lactation, skin of color, and LGBTQ+ populations).

KEY POINTS

- The American Academy of Dermatology's 2016 guidelines for the management of acne vulgaris are updated with a systematic review, which resulted in 18 evidence-based recommendations and 5 good practice statements.
- Strong recommendations are made for topical benzoyl peroxide, retinoids, and/or antibiotics and their fixed-dose combinations, and for oral doxycycline. Oral isotretinoin is strongly recommended for severe acne, acne causing psychosocial burden or scarring, or acne failing standard treatment with oral or topical therapy.
- Conditional recommendations are made for the use of topical clascoterone, salicylic acid, azelaic acid, oral minocycline, sarecycline, combined oral contraceptives, and spironolactone.
- Using topical therapies combining multiple mechanisms of action, limiting systemic antibiotic use, combining systemic antibiotics with benzoyl peroxide and other topical therapies, and adjuvant intralesional corticosteroid injections are recommended as good clinical practices.

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REFERENCES

1. Zaenglein AL, Pathy AL, Schlosser BJ, Alikhan A, Baldwin HE, Berson DS et al. Guidelines of care for the management of acne vulgaris. J Am Acad Dermatol 2016;74:945-73.e33.
2. New Guideline

Figure I. Management of acne vulgaris

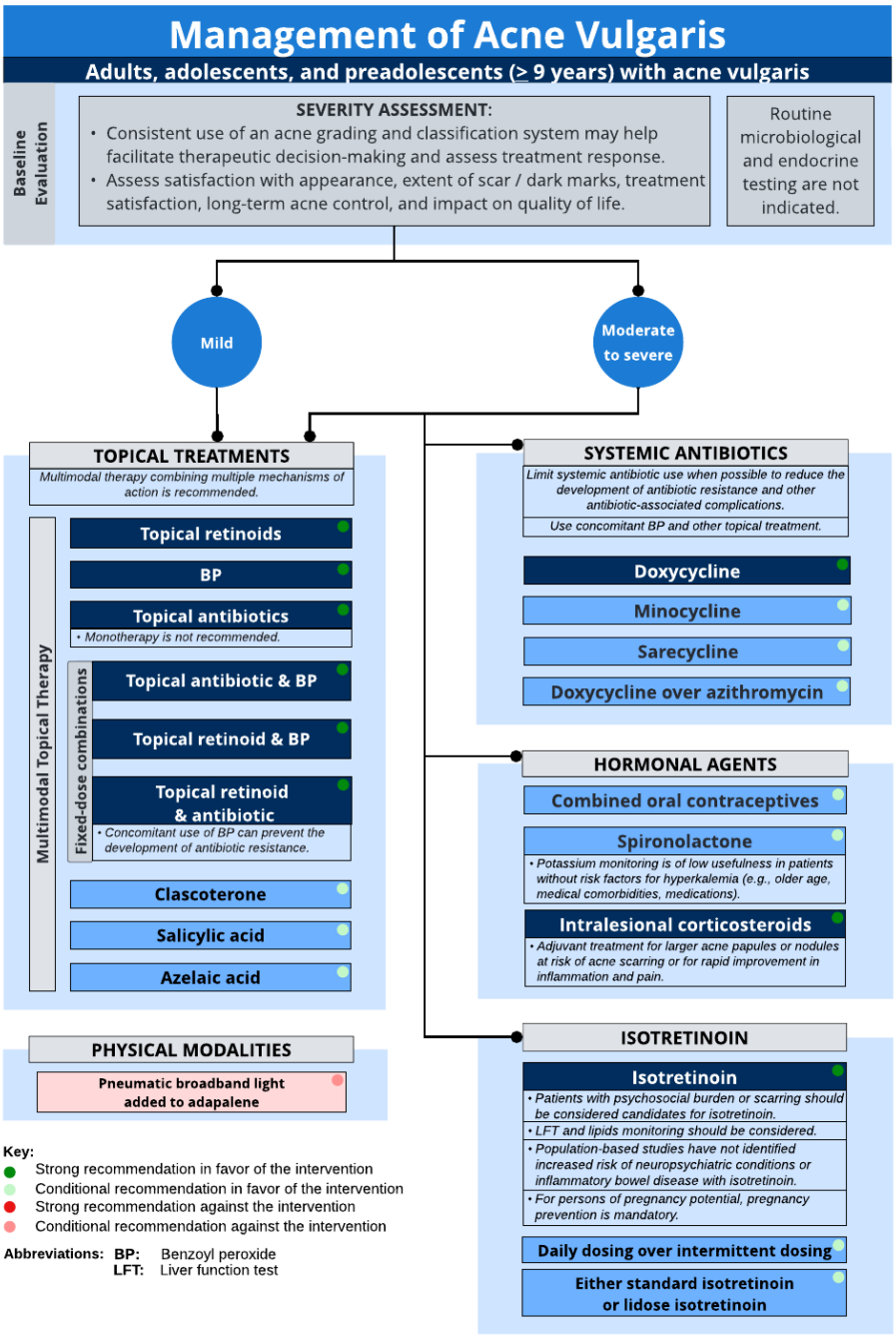

Table I. Recommendation for the management of acne vulgaris in adults, adolescents, and preadolescents (≥ 9 years)

No.	Recommendation	Strength	Certainty of Evidence	Evidence
Topical Agents				
1.1	When managing acne with topical medications, we recommend multimodal therapy combining multiple mechanisms of action.	Good Practice Statement		
1.2	For patients with acne, we recommend benzoyl peroxide.	Strong	Moderate	70, 71, 96-101
1.3	For patients with acne, we recommend topical retinoids.	Strong	Moderate	66, 67, 69-78, 80, 82-84, 299, 300
1.4	For patients with acne, we recommend topical antibiotics Remark: Topical antibiotic monotherapy is not recommended.	Strong	Moderate	72, 82, 97, 99, 100, 105-112, 114
1.5	For patients with acne, we conditionally recommend clascoterone.	Conditional[a]	High	128, 301
1.6	For patients with acne, we conditionally recommend salicylic acid.	Conditional	Low	129
1.7	For patients with acne, we conditionally recommend azelaic acid.	Conditional	Moderate	130, 131, 133
1.8	For patients with acne, we recommend fixed dose combination topical antibiotic with benzoyl peroxide	Strong	Moderate	97, 99, 100, 119, 122-126, 302, 303
1.9	For patients with acne, we recommend fixed dose combination topical retinoid with topical antibiotic. Remark: Concomitant use of benzoyl peroxide is recommended to prevent the development of antibiotic resistance.	Strong	Moderate	72, 82, 119, 304, 305
1.10	For patients with acne, we recommend fixed dose combination topical retinoid with benzoyl peroxide.	Strong	Moderate	70, 71, 117-121, 306
Systemic Antibiotics				
2.1	For patients with acne, we recommend doxycycline.	Strong	Moderate	139, 150-153
2.2	For patients with acne, we conditionally recommend minocycline.	Conditional	Moderate	139, 159-162
2.3	For patients with acne, we conditionally recommend sarecycline.	Conditional[a]	High	164-166
2.4	For patients with acne, we conditionally recommend doxycycline over azithromycin.	Conditional	Low	155-158
2.5	For patients with acne, we recommend limiting use of systemic antibiotics when possible to reduce the development of antibiotic resistance and other antibiotic associated complications.	Good Practice Statement		
2.6	It is recommended that systemic antibiotics are used concomitantly with benzoyl peroxide and other topical therapy.	Good Practice Statement		

Hormonal agents				
3.1	For patients with acne, we conditionally recommend combined oral contraceptive pills.	Conditional[b]	Moderate	174-183
3.2	For patients with acne, we conditionally recommend spironolactone. Remark: Potassium monitoring is not needed in healthy patients. However, consider potassium testing for those with risk factors for hyperkalemia (e.g., older age, medical comorbidities, medications).	Conditional	Moderate	216-223
3.3	For patients with larger acne papules or nodules, we recommend intralesional corticosteroid injections as an adjuvant therapy. Remark: Intralesional corticosteroid injections should be used judiciously for patients who are at risk of acne scarring and/or for rapid improvement in inflammation and pain. Using a lower concentration and volume of corticosteroid can minimize the risks of local corticosteroid adverse events.	Good Practice Statement		
Isotretinoin				
4.1	For patients with severe acne or for patients who have failed standard treatment with oral or topical therapy, we recommend isotretinoin. Remark: Acne patients with psychosocial burden or scarring should be considered as having severe acne and to be candidates for isotretinoin. For patients undergoing treatment with isotretinoin, monitoring of LFTs and lipids should be considered, but CBC monitoring is not needed in healthy patients. Population-based studies have not identified increased risk of neuropsychiatric conditions or inflammatory bowel disease in acne patients undergoing treatment with isotretinoin. For persons of childbearing potential, pregnancy prevention is mandatory.	Good Practice Statement		
4.2	For patients with severe acne, we conditionally recommend traditional daily dosing of isotretinoin over intermittent dosing of isotretinoin.	Conditional	Low	239, 240, 242
4.3	For patients prescribed isotretinoin, we conditionally recommend either standard isotretinoin or lidose-isotretinoin.	Conditional	High	277
Physical modalities				
5.1	For patients with acne, we conditionally recommend against adding pneumatic broadband light to adapalene 0.3% gel.	Conditional	Low	279

[a] Conditional recommendations were made for clascoterone and sarecycline due to high current cost of treatment that may impact equitable acne treatment access.

b Conditional recommendation was made for combined oral contraceptive pills due to the variability in patient values and preferences related to contraception and hormonal medications.