ACNE VULGARIS: DIAGNOSIS AND TREATMENT

Federal Bureau of Prisons

Clinical Guidance

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1. PURPOSE AND USE OF THIS GUIDANCE

The Bureau of Prisons (BOP) Clinical Guidance for *Acne Vulgaris: Diagnosis and Treatment* provides clinical guidance and uniform treatment options for the BOP population.

- The focus of this guidance is to help BOP practitioners diagnose and institute appropriate and cost-effective treatment.
- Recommended treatments of acne vulgaris are dependent on grading criteria and the category of care within the BOP's scope of services.

2. INTRODUCTION

Acne vulgaris affects over 40 million people in the United States. The vast majority of teenagers experience acne, in some form, during puberty. Although most consider acne an isolated disease of teenagers, studies confirm that a significant number experience acne well into adulthood. A 2008 survey of adults found that 35% of women and 20% of men reported persistent acne into their 30s.[1] This persistent or adult acne is seen within the BOP population.

3. PATHOGENESIS

Acne vulgaris is a multifactorial condition that ultimately results in inflammatory changes of the pilosebaceous unit.

- Although no specific genetic factor has been correlated with acne vulgaris, epidemiologic studies have demonstrated a family history of acne is associated with increased incidence.[2]
- Diet has traditionally been associated with a causal or influential factor in acne vulgaris, but this remains controversial. However, recent data is suggestive of an association with a high glycemic index diet.[3]

The instigating step in an acne lesion is keratinocyte proliferation and adhesion.

- Androgen production controls this effect and simultaneously increases sebum production.
- These changes create an obstruction of the pilosebaceous duct and the formation of a microcomedone.
- In the setting of elevated androgens, sebum collection continues, and closed and open comedones appear.
- Bacteria, in particular *Propionibacterium acnes*, proliferate within this environment and contribute to local inflammation.
- With worsening inflammatory mediators, the comedones progress to erythematous papules, pustules, cysts, and nodules.
- In the setting of unremitting disease, the cysts and nodules can rupture, incite further inflammation, and create deep sinus tracts with severe scarring.

4. CLINICAL FEATURES

Acne is most common on the face, but can also be found on the neck, shoulders, chest, and back. Patients present with varying degrees of severity and anatomic involvement, but there is usually a predominant lesion type.

- **Closed comedones** (whiteheads) are small (1mm) flesh-colored papules without surrounding erythema.
- **Open comedones** (blackheads) have an obvious follicular opening dilated with dark keratin.
- Comedones are an essential clinical clue to confirm the diagnosis.

Worsening disease is heralded by inflammation.

- Comedones progress to larger **papules** (1–5mm) with surrounding erythema. Papules may develop into **pustules** (also 1–5mm) with white purulent fluid.
- Development of **subcutaneous nodules and cysts** indicate more severe disease and may be associated with significant tenderness. As the nodules and cysts rupture and coalesce, draining sinus tracts can develop within large plaques.
- Superficial and deep scarring can be seen depending on the severity of disease and patients picking the healing lesions. Patients prone to developing **keloids** can have localized, diffuse, and/or disfiguring keloids.

Rarely, acne patients can develop acne fulminans or acne conglobata.

- **Acne fulminans** develops rapidly with diffuse ulcerating and crusting acne on the face, shoulders, chest, and back. Concomitant fever, polyarthralgias, and lytic bone lesions are prominent.
- **Acne conglobata** presents similarly to acne fulminans, but without systemic involvement.

5. GRADING CRITERIA

Standardizing acne grading criteria is essential for uniform treatment across the BOP.

- Using the grading criteria shown in **TABLE 1**, BOP practitioners can reliably classify patients according to the predominant clinical findings. Treatment is then based on this classification (see **TABLE 2** below).
- **Clinical severity will vary throughout the course of the disease, and grading criteria depend on the *predominant* lesions present and the extent of involvement.** With or without treatment, patients may change acne grade over time.

TABLE 1: GRADING CRITERIA FOR ACNE VULGARIS[4,5,6]

GRADE 1	GRADE 2	GRADE 3	GRADE 4
• Non-inflammatory comedones • Rare occurrence of pustules, papules, or small cysts	• Comedones and papules • Few pustules • Occasional small cysts	• Larger and diffuse inflammatory papules and pustules • Few or localized nodules, cysts, or abscesses	• Generalized nodules and cysts (becoming deeper and confluent) • Sinus tracts • Abscesses
• No scarring or rare superficial scarring	• No scarring or rare superficial scarring	• Moderate scarring (<1–2 mm depth) and potential keloid formation	• Widespread deep scarring (>2 mm depth) and/or hypertrophic/keloid formation
• No tenderness	• Occasional tenderness	• Tenderness with larger individual lesions	• Tenderness more diffuse
• Usually isolated on the face • May involve the neck and shoulders	• Usually isolated on the face • May involve the neck and shoulders	• Typically involves the face, neck, shoulders, chest, and back	• Typically involves the face, neck, shoulders, chest, and back

6. TREATMENT

The acne classifications in **TABLE 1** are the basis for the recommended treatment options shown below in **TABLE 2**.

➔ ***One or all of the treatment options listed in TABLE 2 for a given acne classification may be used.***

- **GRADE 1 AND 2 acne vulgaris treatment:**
  - **Considered "Limited Medical Value"** within the Scope of Services—Categories of Care (as defined in the Patient Care Program Statement). These patients can be treated with the over-the-counter (OTC) medications indicated in **TABLE 2**.
- **GRADE 3 acne vulgaris treatment:**
  - **Considered "Medically Necessary – Non-Emergent."** Treatment, which goes beyond over-the-counter medications, is indicated for extenuating circumstances or unique situations, including patients with recurrent abscesses, a history of MRSA or other infectious risk, or a history of severe keloids.
- **GRADE 4 acne vulgaris treatment**:
  - **Considered "Medically Necessary – Non-Emergent" or "Medically Necessary – Acute or Emergent."** These patients may be considered for the additional treatment options noted in **TABLE 2.**

TABLE 2: TREATMENT OPTIONS BASED ON ACNE CLASSIFICATION GRADE

GRADE 1	GRADE 2	GRADE 3	GRADE 4
• OTC salicyclic acid wash (2–3% preparations) • OTC benzoyl peroxide wash/cream (2.5–10% preparations) • OTC adapalene 0.1% gel	• OTC salicyclic acid wash (2–3% preparations) • OTC benzoyl peroxide wash/cream (2.5–10% preparations) • OTC adapalene 0.1% gel	• OTC benzoyl peroxide wash/cream (2.5–10% preparations) • Topical antibiotics or short courses (10–14 days) of systemic antibiotics* • OTC adapalene 0.1% gel or other topical retinoid*	• OTC benzoyl peroxide wash/cream (2.5–10% preparations) • Consider topical antibiotics or longer courses of systemic antibiotics* • OTC adapalene 0.1% gel or other topical retinoid* or systemic retinoid* • Alternative systemic medications (dapsone, acitretin)

OTC = Over-the-counter medications (commonly available at local commissaries)
* These agents are to be considered only with concomitant use of topical benzoyl peroxide.

- **THE GOAL OF ACNE VULGARIS TREATMENT within the BOP** is to limit serious infections, deep scarring, keloid formation, or systemic inflammation, as found in patients with Grade 4 or more severe Grade 3 presentations.
- **DAILY COMPLIANCE with the prescribed regimens is essential** to controlling acne vulgaris, and documentation of non-compliance is recommended. It may be necessary for the provider to confirm the availability of the necessary OTC medications in the institution's commissary. Repeated and documented non-compliance may result in cessation of treatment due to potentially adverse medication effects.

- **BENZOYL PEROXIDE is an essential component of acne vulgaris treatment** and is recommended for all grades of severity. Initiating benzoyl peroxide treatment can elicit irritation, but this reaction will slowly improve with continued use.
  - Clothes, hair, bedding, and towels can be bleached when coming in contact with benzoyl peroxide, and patients should be warned of this effect.
  - **The benzoyl peroxide cream should NOT be applied at the same time as the topical retinoid** (see *topical retinoids* below); use the topical retinoid at night and the benzoyl peroxide cream in the morning. Using the benzoyl peroxide wash with showering can occur at any time.

- **TOPICAL ANTIBIOTICS used in acne vulgaris should never be used as monotherapy and are only prescribed in conjunction with benzoyl peroxide applications.** The use of both medications together prevents antibiotic resistance of *P. acnes,* as well as *Staphylococcus* and *Streptococcus* species, and prolongs the clinical utility of topical antibiotics.
  - **Practitioners should document continued use of benzoyl peroxide** and, if the patient is not purchasing or using the benzoyl peroxide, further topical antibiotics may be withheld.
  - **Erythromycin 2% solution or clindamycin 1% solution are the topical antibiotics typically used**, and their addition to benzoyl peroxide can significantly decrease acne severity.
  - Limiting topical antibiotic use to 3 months duration is recommended to decrease development of resistance, but treatment of some Grade 3 or Grade 4 patients may require continuous treatment.

- **SYSTEMIC ANTIBIOTICS are reserved for severe acne presentations**, where their antimicrobial and anti-inflammatory effects help to control acne.
  - **As with topical antibiotics, concomitant use of benzoyl peroxide should be instituted** and compliance documented.
  - Their use should be limited to 3 months duration. Extended treatment regimens may be required to control severe acne.
  - The tetracycline class of antibiotics are the first-line therapy and have significant anti-inflammatory properties. Doxycycline is used most frequently, but other classes of antibiotics can also be effective.

- **TOPICAL RETINOIDS (generic tretinoin and tazarotene most commonly) can be used for severe acne and may prevent the development of new lesions in such cases.**
  - **Application of benzoyl peroxide at the same time will inactivate the retinoid** and should be avoided (see *benzoyl peroxide* above).
  - As with the other topical treatments, daily use is required for maximal benefit. Furthermore, use of the product for 4–6 weeks is necessary to appropriately determine efficacy.
  - Virtually every patient that uses a topical retinoid experiences skin irritation and drying. This can be avoided by the use of a non-comedogenic moisturizer applied directly over the retinoid applications.

- **ISOTRETINOIN is FDA-approved for acne vulgaris and is reserved for the most severe forms of acne vulgaris (Grade 4).**
  - Within the BOP, isotretinoin is non-formulary and its use is limited by risk factors for poor outcomes, medication side effects, and regulation through the **iPLEDGE™** program. Participation in **iPLEDGE** is mandatory for both males and females and requires monthly medical visits and laboratory testing.
    - *Patients considered for isotretinoin treatment require consultation with the National Dermatology Consultant and/or referral to a local dermatologist, as well as submission of a non-formulary request.*
  - **The teratogenic potential for isotretinoin is extremely high**, and a pregnant female taking a single dose can cause severe and permanent birth defects. For this reason, isotretinoin carries a black box warning.
  - Psychiatric disorders associated with isotretinoin treatment include depression, psychosis, suicidal thoughts and behavior, and aggressive and/or violent behaviors. The potential to elicit these psychiatric disorders or a patient's underlying psychiatric disorder may preclude isotretinoin treatment within the BOP environment.
  - Other relevant associations with isotretinoin include lipid abnormalities, hepatotoxicity, pancreatitis, inflammatory bowel disease, skeletal abnormalities, ocular abnormalities, and pseudotumor cerebri.

- **Alternative systemic, medications such as acitretin and dapsone can be used for Grade 4 acne.** These medications are not FDA-approved for acne vulgaris, but have been successfully used for acne vulgaris and can control Grade 4 acne vulgaris.
  - *Like isotretinoin, the use of these systemic medications requires consultation with the National Dermatology Consultant or referral to local dermatologist.*

- **Acne fulminans and acne conglobata require systemic prednisone and isotretinoin, as they do not respond to oral antibiotics alone.**
  - *If a patient presents with diffuse necrotizing acne, as seen with these atypical presentations,* ***emergent consultation*** *with the National Dermatology Consultant or a local dermatologist is recommended (these patients may require emergency department evaluation and/or possible hospitalization).*

- **Patients who do not fit into the grading criteria above or have extenuating circumstances should be referred to the National Dermatology Consultant or a local dermatologist.**

7. REFERENCES

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