

# An Overview of Diagnosis and Management of Acne in Primary Health Care Centers

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## Abstract

**Background:** Acne is sorted as a predominant dermatological disorder in young adults, that is either triggered by hormonal, genetic influence, different sex, and environmental factors. There are various topical therapies, systemic treatments, physical modalities, and photodynamic procedures that are best studied and are recommended to aid in the healing process of acute, moderate, and severe forms of acne. **Objective:** To assist family medicine practitioners to approach acne by defining the differential diagnosis, grading systems, and therapeutic modalities. **Methodology:** This medical literature was collected and analyzed using published data on the electronic database of PubMed. Any relevant articles, journals, and randomized controlled trials were included in this review. terms were called on abstract or title ((

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“Acne”[Mesh] AND “Adult” [Mesh] AND “Hormonal”[Mesh]AND “GAGS”[Mesh] AND “IGA”[Mesh]AND “Pathogenesis”[Mesh] “Diagnosis”[Mesh] AND “Isotretinoin”[Mesh]AND “Topical”[Mesh])) **Conclusion:** Family medicine practitioners must lean on evidence-based guidelines to reach treatment goals. In diagnosing acne, defining the differential diagnosis, grading systems of acne and treatment modalities, and their impact are mandatory to reach effective and satisfactory results.

**Keywords:** Acne, Adult, Hormonal, GAGS, IGA, Pathogenesis, Diagnosis, Isotretinoin, Topical.

## Introduction

Acne is a well-known inflammatory dermatosis that is either triggered by hormonal, genetic influence, different sex, and environmental factors. (Dréno et al., 2018) A recent systemic study revealed a higher proportion of women are affected by the disease more than men. In both genders, acne is recognized in early adolescence. However, in women, a rare flare of acne appears during the postmenopausal period as a result of excessive estrogen and androgens production. Acne has strongly been associated with multiple mental traumas and severe psychosocial stresses including depression, anxiety, and suicidal impulsive acts. (Rocha and Bagatin, 2018)

Identification of the differential diagnosis that can mimic acne lesions is crucial. The treatment goals to limit acne progression are based on learning and grading the lesions' variations and severity, thus guiding family medicine practitioners to confirm the diagnosis and maintain an effective mode of therapy (Faller et al., 2020; Ren-Zhang et al., 2020; Hanawi et al., 2020; Marzangi et al., 2018). There are various topical therapies, systemic treatments, physical modalities, and photodynamic procedures that are best studied and are recommended to aid in the healing process of acute, moderate, and severe forms of acne. (Zaenglein et al., 2016)

This review lists divergent angles in the management of acne to assist family medicine practitioners to approach acne defining the differential diagnosis, grading systems of acne, and treatment modalities.

## Methodology:

This literature was collected and analyzed using published data on the electronic database of PubMed, and these terms were called within abstract or title (( “Acne”[Mesh] AND “Adult” Mesh] AND “Hormonal”[Mesh]AND “GAGS”[Mesh] AND “IGA”[Mesh]AND “Pathogenesis”[Mesh] “Diagnosis”[Mesh] AND “Isotretinoin”[Mesh]AND “Topical”[Mesh])) all references are suitable for this review and all are written in English only.

## Review

### Pathogenesis:

Acne pathogenesis is complicated as it is related to many major androgenic, genetic influences, gender differences, and other environmental factors including lifestyle modifications and dietary changes. (Dréno et al., 2018) These exogenous accompanied by endogenous biological factors enhance the development of inflammatory lesions affecting the sebaceous glands and hair follicles are the chief component that contributes to acne formation. Moreover, biological factors activity in stimulating inflammatory mediators provokes pilosebaceous unit that excess sebum production and promotes microcomedo formation as a result of follicular keratinization and decreased keratinocytes desquamation. The gram-positive *Propionibacterium* is confirmed to be the first responsible organism for the outbreak mode of acne. (Rocha and Bagatin, 2018; Bhat et al., 2017)

### Diagnosis:

Acne is categorized and separated depending on the basic lesion features which may be non-inflammatory comedones or papulopustular and nodular inflammatory lesions. Moreover, the site of the evolved acne lesion appears on the neck, face, back, and front of the trunk. The types of acne include acne vulgaris, acne mechanica acne excoriee, acne conglobate, acne fulminans, acne rosacea, mallorea acne, acne fulminans, acne cosmetica, pomade acne, acne keloidalis nuchae, chloracne, and acne medicamentosa. (Bhat et al., 2017) Acne vulgaris affects about 85% of young adult's acne cases. This sets out acne vulgaris as the most common type of acne. (Bhat et al., 2017; Bagatin et al., 2019) Identification of inflammatory lesions and different conditions that can resemble acne is essential to confirm the diagnosis of acne (**Table 1**).

**Table 1.** Possible Acne differential diagnosis (Titus and Hodge, 2012)

Differential Diagnosis	Characteristic features
Drug-induced acneiform eruption	History of androgenic drugs, corticosteroids, adrenocorticotrophic hormones, oral contraceptives, bromides, iodides, isoniazid, antiepileptic drugs, and antipsychotic drugs
Folliculitis	Lesions flare after shaving or scratching
Hidradenitis suppurativa	Starts as painful lumps and boils-like nodules

Pseudofolliculitis barbae	Starts after shaving curly hair consistently
Miliara	Also known as “heat rash”; starts after being exposed to blazing heat or after exertion.
Rosacea	Red areas or spots featured as erythema and telangiectasia that emerges on the cheeks.
Seborrheic dermatitis	Yellow greasy scales over the scalp
Perioral dermatitis	Sites of lesions start the ocular region, the nostrils, over the vermilion border, and occasionally in the genital region

The severity of acne is evaluated by different assessment scores using IGA (Global Assessment of Acne) or GAGS (Global Acne Grading System). There is no standardized scoring system for studying the severity of acne although these scaling techniques give a more relevant clinical evaluation. However, GAGS distributes six regions based on the face, upper back, and chest; each region is evaluated with a given score according to the type of lesion and the surface area (**Table 2**). On the other hand, IGA is sorted depending on facial descriptive criteria only. (Alsulaimani et al., 2020)

**Table 2:** Global Acne Grading System (Doshi et al., 1997)

Site	Factor (F)	Severity (S)	Local score = (F×S)
Forehead	2	0:Nail	Mild :1-18
Right cheek	2	1:comedone	Moderate: 19-30
Left cheek	2	2: papules	Severe: 31-38
Nose	1	3:Pustules	Very severe: >39
Chin	1	4:nodules	
Chest upper and lower back	3		

Hormonal changes may contribute to severe forms of acne flare-ups. Acne in this form is a cutaneous disease that is influenced by metabolic, neuroendocrine, and ovarian dysfunction. (Witchel et al., 2019). A polycystic ovarian syndrome is the most known hyperandrogenism disorder linked to cutaneous manifestations include acne and hirsutism, other clinical features of the polycystic ovarian syndrome are oligomenorrheas, amenorrhea, alopecia, and obesity in about 76% of women. (Misitzis et al., 2019) However, the severity of acne in polycystic ovarian syndrome identifies a sharp increase in the total free androgen value and free T levels. Furthermore, acne in this condition is usually persistent and the patient must undertake a detailed hormonal study to confirm the diagnosis. (Misitzis et al., 2019; Franik et al., 2018)

### Management:

Treating acne is expressed in physical and psychosocial aspects. The response to treatment in acne faces many therapeutic challenges. These challenges depending on the clinical picture, efficacy, and tolerability of the medication to contribute to an acceptable satisfactory result for the patient. (Gebauer 2017) Occasionally, combination therapy of antibiotics and topical

retinoid is recommended for most mild cases of acne and has proven superior efficacy as the first line of mild acne treatment. Topical retinoids are anti-inflammatory comedolytic therapy and are established to normalize reactive hyperproliferation and hyperkeratinization. Three topical retinoids with considerable tolerability and significant results, these topical retinoids are adapalene, tretinoin, and tazarotene. However, topical therapy can sometimes lead to skin erythema, peeling, and dryness. Some studies suggested tolerability strategies to maintain and limit cutaneous irritation possibilities. (**Table 3**) (Leyden et al., 2017)

**Table 3:** Strategies to limit tolerability therapeutic issues (Leyden et al., 2017)

Take full patient History
Ask about past possible tolerability issues
Patient education
Mild irritation is part of the process and diminishes from 1-2 weeks and is managed in suitable steps
Applying a thin layer of retinoids regimen (apply using a fingertip or pea-sized dose )
Using Cleansing gel but refrain from over-cleansing
Change retinoid formation suitable for season or climate
Titration of retinoid doses
When irritation is suspected to happen apply retinoids every other day for the first 2-4weeks
Application of non-comedogenic moisturizer
Application of retinoid with full face method for the first 2-4 weeks and rinse after 30-60 min.

Several topical antibiotics participate in the treatment guidelines of acne. Commonly prescribed antibiotics include macrolides, tetracycline, and clindamycin. These antibiotics are recommended to be used twice per day, accompanied by benzoyl peroxide or retinoids to increase the efficacy of the drug. (Lynn et al., 2016) Systemic therapy regimens are required if topical combined therapy is ineffective and failed to reached patients satisfactory expectation. This depends on the clinical evaluation and grading system of acne lesions. Systemic therapy is usually prescribed in moderate to severe modes of acne. Systemic therapy relies on oral antibiotics, hormonal therapy, and oral Isotretinoin. There are a variety of systemic therapy concentrations, formulations, and titration that deserves careful considerations on the adverse effects on the alternative clinical options of the treatment regimen for acne. (Lynn et al., 2016; Barbieri et al., 2019) Referral to a dermatologist is recommended if treatment regimens failed or did not meet goal expectations to perform more effective interventions. (Titus and Hodge, 2012).

## Conclusion:

Acne has many contributing factors that greatly influence Family medicine practitioners to lean on evidence-based guidelines to reach treatment goals. In diagnosing acne, grading systems and identifying differential diagnoses are quietly important to confirm the diagnosis. Specific treatment options and their impact are mandatory to reach effective and satisfactory results.

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