

# Acneiform facial eruptions

## *A problem for young women*

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### ABSTRACT

**OBJECTIVE** To summarize clinical recognition and current management strategies for four types of acneiform facial eruptions common in young women: acne vulgaris, rosacea, folliculitis, and perioral dermatitis.

**QUALITY OF EVIDENCE** Many randomized controlled trials (level I evidence) have studied treatments for acne vulgaris over the years. Treatment recommendations for rosacea, folliculitis, and perioral dermatitis are based predominantly on comparison and open-label studies (level II evidence) as well as expert opinion and consensus statements (level III evidence).

**MAIN MESSAGE** Young women with acneiform facial eruptions often present in primary care. Differentiating between morphologically similar conditions is often difficult. Accurate diagnosis is important because treatment approaches are different for each disease.

**CONCLUSION** Careful visual assessment with an appreciation for subtle morphologic differences and associated clinical factors will help with diagnosis of these common acneiform facial eruptions and lead to appropriate management.

### RÉSUMÉ

**OBJECTIF** Faire le point sur le diagnostic clinique et les modalités thérapeutiques actuelles de quatre types d'éruptions faciales acnéiformes chez la femme jeune: l'acné vulgaire, l'acné rosacée, la folliculite et la dermatite périorale.

**QUALITÉ DES PREUVES** Le traitement de l'acné vulgaire a fait l'objet de plusieurs essais randomisés ces dernières années. Les recommandations pour le traitement de l'acné rosacée, de la folliculite et de la dermatite périorale reposent surtout sur des essais comparatifs ou ouverts (preuves de niveau II), mais aussi sur des opinions d'experts et des déclarations de consensus (preuves de niveau III).

**PRINCIPAL MESSAGE** Les femmes jeunes consultent fréquemment les établissements de soins primaires pour des éruptions faciales acnéiformes. Il est souvent difficile de distinguer des conditions morphologiquement semblables. Il importe toutefois de poser un diagnostic précis car les modalités thérapeutiques diffèrent d'une maladie à l'autre.

**CONCLUSION** Le diagnostic et le traitement des éruptions faciales communes sont plus faciles si l'on fait une évaluation visuelle attentive et si on tient compte des différences morphologiques subtiles et des facteurs cliniques associés.

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Cet article a fait l'objet d'une évaluation externe.

Acneiform eruptions, such as acne vulgaris, rosacea, folliculitis, and perioral dermatitis, are routinely encountered in primary care. Acne vulgaris alone affects up to 80% of adolescents and continues to affect 40% to 50% of adult women.<sup>1</sup> An estimated 13 million Americans are affected by rosacea.<sup>2</sup> These conditions often have psychosocial sequelae.<sup>3</sup>

These four eruptions are challenging to diagnose because they all resemble acne. This article describes these eruptions, highlighting the salient distinguishing characteristics, and summarizes current management recommendations from the medical literature.

### Quality of evidence

PubMed was searched from January 1966 to December 2003 using the names of each of the acneiform conditions combined with "treatment." Several randomized controlled trials (level I evidence) on treatment of acne vulgaris were found, but there was little level I evidence for treating the other conditions. Recommendations for treating these conditions are based mainly on comparison or open-label studies (level II evidence) and expert opinion and consensus guidelines (level III evidence).

### Acne vulgaris

Acne vulgaris is a disease of the sebaceous follicles that primarily affects adolescents but not uncommonly persists through the third decade and beyond, particularly in women. Pathogenesis is multifactorial and involves an interplay between abnormal follicular keratinization or desquamation, excessive sebum production, proliferation of follicular *Propionibacterium acnes*, and hormonal factors.

Diagnosis is often clear, and laboratory investigations are unnecessary, except where signs and symptoms suggest hyperandrogenism.<sup>4,5</sup> Acne is

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characterized by a variety of lesions that indicate varying degrees of disease severity.

Mild or noninflammatory acne is characterized by comedones. Closed comedones appear as pale white, slightly elevated, dome-shaped, 1- to 2-mm papules with no clinically visible follicular orifice (Figure 1). Open comedones are flat or slightly raised lesions with a visible central orifice filled with a brown-black substance (Figure 1). Inflammatory acne has a range of lesions. Papules (Figure 1) are often encircled by an inflammatory halo, and pustules can be identified by a central core of purulent material. Nodules are rounder and deeper to palpation than papules and are often tender. Cysts have a propensity to scar and essentially feel like fluctuant nodules. Acne scars (Figure 1) usually appear as sharply punched out pits.

**Figure 1. Acne vulgaris in various stages:** A) Several closed comedones (1-mm to 2-mm pale white, dome-shaped papules); B) Several open comedones, papules with a central orifice filled with a brown-black substance; C) Acne papule; D) Several punched-out depressions marking acne scars.



Before commencing therapy and in the interest of establishing a therapeutic alliance, it is important to explain to patients the causes of acne and the rationale for therapy as well as the expected duration of therapy (weeks to months). The literature suggests that therapy be based on the severity or the predominant morphologic variant of disease.

Mild comedonal acne should be treated with topical antimicrobials,<sup>1,6-8</sup> such as benzoyl perox-

topical comedolytics,<sup>1,6-8</sup> such as tretinoin (available in 0.025/0.05/0.1% cream, 0.01/0.025% gel, and 0.05% liquid) (Table 1<sup>9-24</sup>). Benzoyl peroxide is preferred for patients with inflammation<sup>8</sup>; tretinoin is effective for cases with a predominance of comedones. The recently developed topical retinoid, adapalene, is only marginally more effective than tretinoin, but is better tolerated.<sup>7</sup> Choice of treatment depends largely on patients' tolerance and preference.<sup>6</sup> Gels and creams with water bases are less drying than gels in alcohol or glycol bases. Exfoliants, such as salicylic acid, remain an option for acne treatment, but are ineffective for deep comedones and can be irritating.<sup>1</sup>

Papular and pustular acne can be treated with topical or oral antibiotics (Table 1<sup>9-24</sup>). Both topical erythromycin (available as solution, gel, or pledgets) and clindamycin (available as solution, gel, lotion, or pledgets) are reported to be equally effective.<sup>9,25</sup> Topical erythromycin is considered safest during pregnancy.<sup>1</sup>

Combination topical products, such as Clindoxyl (clindamycin and benzoyl peroxide) and Benzamycin (benzoyl peroxide and erythromycin), have recently come on the market and are quite useful.<sup>6</sup> Tetracycline (1000 mg/d in two or four divided doses), because of its effectiveness and low cost, is the first-choice oral antibiotic followed by minocycline (50 to 100 mg/d) or doxycycline (100 mg/d). These drugs are often prescribed, along with topical retinoids, combination products, or antimicrobials, to improve efficacy and prevent resistance from developing. Trimethoprim-sulfamethoxazole is best reserved for severe, recalcitrant cases.<sup>1</sup> Other oral antibiotics mentioned in the literature include erythromycin, clindamycin, ampicillin, and amoxicillin in no particular order. Most of these drugs should be used for at least 2 months before they are deemed ineffective.<sup>6</sup>

Cases of treatment-resistant, nodulocystic, or scarring acne should be referred to a dermatologist for isotretinoin treatment, steroid injection, or hormone therapy (Table 1<sup>9-24</sup>). Isotretinoin is notorious for its drying side effects and teratogenicity, but is a very effective medication with a response rate as high as 90%.<sup>1</sup> It is administered at 0.5 to 1.0

**Table 1. Recommendations for treating acne vulgaris**

**NONINFLAMMATORY**

First line: Benzoyl peroxide (I)<sup>10</sup> or topical tretinoin (I)<sup>11</sup>

Second line: Adapalene (I)<sup>11</sup>

**PAPULAR OR PUSTULAR**

First line: Topical erythromycin (I),<sup>10,12</sup> clindamycin (I),<sup>9,13</sup> clindoxyl (I),<sup>14</sup> or benzamycin (I)<sup>15</sup>

Second line: Oral tetracycline (I),<sup>16</sup> minocycline (I),<sup>17</sup> doxycycline (I),<sup>18</sup> erythromycin (I),<sup>16</sup> clindamycin (I),<sup>19</sup> ampicillin (III), or amoxicillin (III)

Third line: Oral antibiotics plus topical retinoids (I),<sup>20</sup> clindoxyl or benzamycin (III), or antimicrobials (III)

Fourth line: Trimethoprim-sulfamethoxazole (III)

**NODULOCYSTIC OR TREATMENT-RESISTANT ACNE OR SCARRING**

First line: Steroid injection, if sparse (I),<sup>21</sup> isotretinoin, if diffuse (I)<sup>22</sup>

Second line: Antiandrogens, for example, oral contraceptives (I)<sup>23</sup> or spironolactone (I)<sup>24</sup>

*Roman numerals indicate level of evidence.*

early response with minimal side effects. Average duration of therapy is 4 months; a second course might be necessary. Triamcinolone acetonide intralesional injections are feasible for sparser nodulocystic lesions, but care must be taken to avoid steroid atrophy. Finally, for women unresponsive to conventional therapy, hormonal therapy (biphasic or triphasic contraceptive pills or spironolactone, which has strong antiandrogenic activity) is recommended in conjunction with topical treatment.<sup>1,8</sup>

## Rosacea

Rosacea is a chronic vascular acneiform facial disorder that affects primarily 20- to 60-year-old people of northern and eastern European descent. Although the condition is equally prevalent in men and women, it is usually more severe in men and can progress to tissue hyperplasia. Pathogenesis remains unknown, although many factors including bacteria, *Demodex* mites, vasomotor and connective tissue dysfunction, and topical corticosteroids have been implicated.

Rosacea is characterized by a triad of symmetrical erythema, papules and pustules, and telangiectasia on the cheeks, forehead, and nose (Figures 2 and 3). The absence of comedones is an important factor that differentiates rosacea from acne vulgaris. Rosacea follows a course of exacerbations and

**Figure 2. Rosacea:** A young woman has persistent erythema and red papules on both cheeks. No comedones are visible.



**Figure 3. Rosacea:** Rosacea can persist into later decades. This older woman has deep symmetrical erythema and many red papules on her cheeks, forehead, and chin.



and hot drinks. Frequent flushing, mild telangiectasia, increased telangiectasia with acneiform eruptions, and tissue hyperplasia are the four sequential stages of the condition. Rosacea can also be associated with ocular symptoms of burning, redness, itching, sensation of a foreign body, tearing, dryness, photophobia, and eyelid fullness or swelling.<sup>26</sup>

Begin treatment by discussing potential triggers and how to avoid them. Concomitant topical metronidazole and oral tetracycline are recommended as first-line therapy for early-stage rosacea<sup>27,28</sup> (Table 2<sup>29-33</sup>). This combination lowers the potential for relapse once the oral medication is withdrawn.<sup>27,28</sup> Oral minocycline (100 to 200 mg/d) is considered an acceptable alternative.<sup>28</sup> Doxycycline, clindamycin, erythromycin, clarithromycin, ampicillin, and metronidazole have also been shown to be effective (Table 2<sup>29-33</sup>). Oral therapy should be prolonged in those with ocular symptoms, although some sources recommend deferring oral antibiotics until there are ocular complaints.<sup>34</sup>

There is no significant difference in efficacy between twice-daily treatment with 0.75% topical metronidazole and once-daily treatment with 1.0% metronidazole.<sup>27</sup> Topical sulfacetamide is an alternative if metronidazole is not tolerated or if patients want concealment (sulfacetamide is available in a flesh-coloured preparation) (Table 2<sup>29-33</sup>). Oral tetracycline is usually started at 1000 mg/d, tapered, and finally discontinued. Various sources recommend various tapering protocols and duration of therapy. Some recommend tapering to 500 mg/d over 6 weeks followed by a slow maintenance taper to 250 mg/d over 3 months if patients respond; otherwise, a 6-week course of full-dose tetracycline should be repeated.<sup>2</sup> Others recommend therapy at full dose until clearance or for 12 weeks' duration.<sup>28</sup> Recently, topical retinoid and vitamin C preparations have been shown to have a beneficial effect<sup>29,32</sup> (Table 2<sup>29-33</sup>).

For recalcitrant rosacea, a 4- to 5-month course of oral isotretinoin at either low dose (10 mg/d) or the dose used for acne vulgaris has been shown to reduce symptoms.<sup>35</sup> Patients with rosacea with fibrotic changes should be referred to a cosmetic

**Table 2. Recommendations for treating rosacea**

First line: Topical metronidazole (I) <sup>30</sup> plus oral tetracycline (I) <sup>31</sup> or minocycline (III)
Second line: Sulfacetamide (III) plus oral antibiotics as above
Third line: Topical retinoid (II) <sup>32</sup> plus vitamin C (II) <sup>29</sup>
Fourth line: Isotretinoin (II) <sup>33</sup>

Roman numerals indicate level of evidence.



## Folliculitis

Folliculitis is an inflammation of the hair follicle as a result of mechanical trauma (eg, shaving, friction), irritation (certain topical agents, such as oils), or infection. Mechanical trauma, occlusion, and immunocompromise predispose patients to infection. The usual infectious organism is *Staphylococcus aureus*, although Gram-negative folliculitis can result from prolonged use of antibiotics for acne. *Pityrosporum*, a saprophytic yeast, has also been implicated.

Diagnosis is clinical. There is usually an abrupt eruption of small, well circumscribed, globular, dome-shaped, often monomorphic pustules in clusters on hair-bearing areas of the body and face (Figure 4). Deeper follicular infections, or sycosis, although rare, are more erythematous and painful.

Initially, potassium hydroxide testing of the hair and any surrounding scale should be considered to exclude *Pityrosporum*. Otherwise, an identifying culture should always be taken before initiating therapy.<sup>34</sup> In confirmed cases, topical therapy with econazole cream, selenium sulfide shampoo, or 50% propylene glycol<sup>36</sup> has been recommended for a duration of 3 to 4 weeks (Table 3<sup>37-41</sup>). Subsequent additional

**Figure 4. Folliculitis:** A cluster of small monomorphic pustules appears on a woman's forehead.



**Table 3. Recommendations for treating folliculitis**

PITYROSPORUM
First line: Topical econazole (III), selenium sulfide shampoo (III), or 50% propylene glycol (III)
Second line: Oral fluconazole (II), <sup>37</sup> itraconazole (I), <sup>38</sup> or ketoconazole (II) <sup>37</sup>
Third line: Oral antifungal plus topical agents (II) <sup>37</sup>
BACTERIAL
First line: Topical mupirocin (I), <sup>39</sup> erythromycin (III), clindamycin (III), or benzoyl peroxide (III)
Second line: Oral antistaphylococcal antibiotics, such as fluoroquinolones (I), <sup>40</sup> first-generation cephalosporins (III), or macrolides (III)
GRAM NEGATIVE
First line: Isotretinoin (II) <sup>41</sup>
Second line: Ampicillin (III) or trimethoprim-sulfamethoxazole (III)

Roman numerals indicate level of evidence.

intermittent maintenance doses once to twice a week<sup>42</sup> have been found helpful for avoiding recurrence, which is common in folliculitis. Oral antifungals (fluconazole, ketoconazole, or itraconazole) have been deemed effective when used for 10 to 14 days<sup>43</sup> (Table 3<sup>37-41</sup>). One clinical trial demonstrated the superiority of combined topical and oral therapy as compared with either alone.<sup>37</sup>

Topical therapy for superficial *S aureus* includes erythromycin, clindamycin, mupirocin, or benzoyl peroxide<sup>44</sup> (Table 3<sup>37-41</sup>). Oral antistaphylococcal antibiotics (first-generation cephalosporins, penicillinase-resistant penicillins, macrolides, or fluoroquinolones) are indicated for extensive disease or for the deep involvement of sycosis<sup>44</sup> (Table 3<sup>37-41</sup>). Treatment is continued until lesions completely resolve.<sup>45</sup> Gram-negative folliculitis can be treated as severe acne with isotretinoin at a dose of 0.5 to 1.0 mg/kg daily for 4 to 5 months<sup>46</sup> (Table 3<sup>37-41</sup>). Alternatives are ampicillin at 250 mg or trimethoprim-sulfamethoxazole at 600 mg four times daily, but response to antibiotic treatment is slow, and relapse is common.

## Perioral dermatitis

Perioral dermatitis is an acneiform eruption of unknown etiology, although many contribut-

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