

ARTICLE

# Drug treatment of acne

**Jo-Ann See**

Dermatologist  
Central Sydney  
Dermatology  
Sydney

**Key words**

antibiotics, retinoids, topical administration

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## SUMMARY

Acne is a common skin disorder not just confined to adolescence.

For patients with mild to moderate acne who have not responded to over-the-counter products, prescribing topical antibiotics and/or retinoids may be considered.

For patients with moderate to severe acne, oral antibiotics or the contraceptive pill can be combined with topical benzoyl peroxide or a topical retinoid.

For patients who present with severe acne nodules and cysts, or who have not responded to 12 weeks of oral antibiotics, referral to a dermatologist for oral isotretinoin is recommended.

Once acne has cleared, 3-12 months or longer with a topical retinoid may help to prevent recurrence.

## Introduction

Acne is a common skin disorder in teenagers, but can also occur before adolescence and in older people. Treatment needs to be individualised according to the severity and extent of the disease. Due to the chronicity of acne, therapeutic regimens may need to be altered according to a change in the disease severity or ineffectiveness of a chosen treatment. Follow-up of the patient is therefore important. Timely and effective treatment of acne minimises the risk of long-term scarring and psychological distress.

## Seeing the doctor and initial acne assessment

Before anything is prescribed, the patient needs to be assessed to exclude any contributing factors such as drugs which can aggravate acne (see Box) or underlying hormonal issues such as polycystic ovarian syndrome. A few patients may even be using thick moisturisers, cosmetics or sunscreens that are aggravating the problem.

It is important to work out a realistic treatment plan with the patient and inform them about potential adverse effects, otherwise their expectations will not be met and compliance will be poor. It must be stressed that acne treatments may take several weeks to work.

## Topical over-the-counter products

Over-the-counter acne products are generally in the form of cleansers or leave-on applications that work by killing acne bacteria, drying up excess oil and sloughing dead skin cells. They usually contain ingredients such as benzoyl peroxide, salicylic acid, glycolic acid, lactic acid, sulfur or resorcinol which are useful in mild acne when lesions are superficial whiteheads, blackheads, papules and pustules.

Azelaic acid (gel and lotion) is not commonly used. However, it may be useful in acne and post-inflammatory hyperpigmentation in darker skinned patients. It is used twice daily and is considered safe in pregnancy.

## Topical prescription treatments

Topical prescription treatments may be adequate for mild acne and can be combined with oral medications for moderate to severe disease or if the patient is unresponsive.

Many practitioners start with a topical antibiotic, especially for mild inflammatory lesions. However, topical retinoids can be used for inflammatory lesions as well. They are particularly helpful for blackheads and whiteheads as well as long-term maintenance therapy once the acne has cleared as they prevent blocked pores forming. If patients are not seeing significant improvement after 12 weeks, follow-up is necessary to consider adding oral treatment.

Topical therapies are not spot treatments and should be applied to the whole area affected. Acne lesions occur in a field and therefore the active lesions, as well as the microscopic microcomedone, are targeted in an all over application. The treatment should be applied to a cool, dry, clean face. Moist skin increases their absorption and therefore increases the risk of skin irritation which the patient may feel as burning or stinging.

## Box Drugs that may worsen acne

Androgenic steroids  
Corticosteroids  
Anticonvulsants  
Barbiturates  
Lithium  
Bromides  
Iodides

### **Topical antibiotics**

Topical clindamycin or erythromycin is used once or twice daily. Solution or gel formulas may be more useful for the trunk as they may cause irritation on facial inflammatory lesions. Lotions may be more cosmetically appealing for the face. It is generally recommended that antibiotics be used as combination therapy with either a topical retinoid or benzoyl peroxide or both. A combination of topical clindamycin and benzoyl peroxide product is available for once-daily use. Another combination strategy is to apply a topical antibiotic in the morning and a topical retinoid at night.

### **Topical retinoids**

Retinoids for once daily use are adapalene, isotretinoin, tazarotene and tretinoin. A combination product of adapalene and benzoyl peroxide can be used nightly. All topical retinoids may cause skin irritation which can be improved by using them with a moisturiser.

### **Skin irritation**

Any topical acne preparation (either over-the-counter or prescribed) may cause skin irritation so patients should be advised to:

- apply to a cool, dry face
- avoid the use of facials or scrubs before application
- start with a lower concentration of benzoyl peroxide
- wash off initially after a short application time and then gradually increase the time of application
- use every second night to begin with
- test by using on a limited area initially.

### **Oral prescription treatments**

Antibiotics, the contraceptive pill for females, anti-androgens for females (spironolactone and cyproterone acetate) and isotretinoin are oral options for acne.

### **Antibiotics**

Oral antibiotics are useful for moderate to severe inflammatory acne characterised by papules, pustules, nodules and cysts. They are also useful if acne is occurring in multiple sites such as the face and trunk. To minimise antibiotic resistance, oral antibiotics should not be used together with a topical antibiotic, but rather with a topical benzoyl peroxide cleanser or cream. Courses limited to 3–6 months are recommended to minimise the risk of antibiotic resistance and adverse effects.

### **First-line**

First-line oral antibiotic therapy is doxycycline 50–100 mg daily or minocycline 50–100 mg daily. These drugs should not be given to children under 10 years of age (because of the risk of permanent discolouration of the teeth) or women who are pregnant or attempting to get pregnant because of toxic effects on fetal bone formation.

Patients should be warned of gastrointestinal adverse effects as well as the risk of vaginal candidiasis in women. Photosensitivity can occur in patients taking doxycycline. Long-term treatment with minocycline can result in abnormal pigmentation and an uncommon lupus-like drug reaction. These oral antibiotics should not be combined with oral retinoids due to the risk of benign intracranial hypertension.

### **Second-line**

A second-line oral antibiotic is erythromycin ethyl succinate 400–800 mg twice daily. Although there is well documented evidence of antibiotic resistance to erythromycin, it is still used. Patients need to be warned that gastrointestinal upset is common and there are many potential drug interactions including with anticoagulants, digoxin, phenytoin and theophylline.

### **The contraceptive pill**

Oral contraceptives with anti-androgenic properties should be considered for acne in girls and women who find topical therapies and oral antibiotics ineffective or only partially effective. Patients often need topical therapy while they wait for the full benefit of the pill to work, which usually takes three months.

### **Isotretinoin**

Oral isotretinoin is the treatment of choice for patients who have not adequately responded to 12 weeks of oral antibiotics or who present initially with severe acne nodules and cysts. Referral to a dermatologist is recommended. (General practitioners cannot prescribe oral isotretinoin.) Any patient who is at risk of scarring, who has a family history of acne scarring or is experiencing severe psychological distress may also need referral.

Laboratory tests are done at baseline and during the course of treatment. With the referral letter it may be helpful to organise the baseline investigations which are a fasting cholesterol and triglyceride test, liver function tests and a pregnancy test for females. Oral isotretinoin may cause an increase in blood lipids. After the patient has had 4–8 weeks therapy, the laboratory investigations are repeated and compared to baseline. If the tests are normal they may be

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repeated at the end of treatment, however if there are any abnormalities they will need repeating more regularly with or without lowering of the daily dose.

Females of childbearing age must use adequate contraception before, during and for one month after treatment because birth defects can occur.

Possible adverse effects from oral isotretinoin may be minimised by starting patients on low-dose therapy (0.2–0.5 mg/kg) and then gradually increasing the daily dose and titrating with adverse effects. Strategies for managing adverse effects include:

- using a lip balm, eye drops and moisturiser for the most common adverse effects of dry lips, eyes and skin
- having an appropriate skin care routine such as thicker moisturisers for very dry skin and using a topical steroid if indicated for dermatitis, especially in winter
- covering up and using sunscreen (factor 50) to prevent photosensitivity.

Some patients have reported mood changes while taking oral isotretinoin. If this occurs, the medication should be stopped. The patient's dermatologist

should be contacted, and if necessary seek psychiatric assessment. Other reasons to contact the prescribing dermatologist may be bowel symptoms, persistent headaches or the risk of pregnancy.

## Recommendations

The majority of patients with acne have mild to moderate disease and can be managed by a general practitioner. Once patients have tried over-the-counter treatments, topical antibiotics and/or topical retinoids may be prescribed. Patients should be followed up in 8–12 weeks. If there is no therapeutic benefit, oral antibiotics or a hormonal therapy can be combined with a topical therapy such as benzoyl peroxide or a retinoid.

For more severe acne cases or those not responding to a 12-week course of oral antibiotics, referral for oral isotretinoin should be considered. After acne has cleared, maintenance therapy for 3–12 months or longer with a topical retinoid is a good option. ◀

*Conflict of interest: none declared*



## SELF-TEST QUESTIONS

### True or false?

1. Topical retinoids should be applied to dry skin to reduce skin irritation.
2. Oral antibiotics should be combined with topical antibiotics in cases of severe acne.

Answers on page 211

## FURTHER READING

Strauss JS, Krowchuk DP, Leyden JJ, Lucky AW, Shalita AR, Siegfried EC, et al; American Academy of Dermatology/American Academy of Dermatology Association. Guidelines of care for acne vulgaris management. *J Am Acad Dermatol* 2007;651-63.

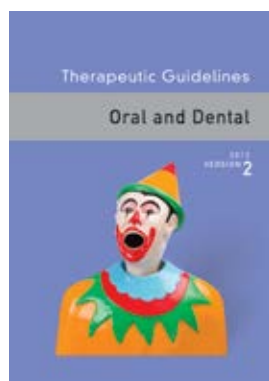
Thiboutot D, Gollnick H, Bettoli V, Dréno B, Kang S, Leyden JJ, et al. New insights into the management of acne: an update from the Global Alliance to Improve Outcomes in Acne group. *J Am Acad Dermatol* 2009;60(5 Suppl):S1-50.

# Book review

## Therapeutic Guidelines: Oral and Dental. Version 2.

### Clive Wright

Clinical professor  
Centre for Education and  
Research on Ageing  
Concord Clinical School  
The University of Sydney



Melbourne: Therapeutic Guidelines Limited; 2012.  
221 pages

Version 2 of Therapeutic Guidelines: Oral and Dental has included two new chapters, and updated all other sections. The target audience for these guidelines is not only oral health practitioners, but also general medical practitioners and other health professionals who may be called upon to provide advice on dental matters and remedies.

For dentists and oral health practitioners the guidelines provide a well cross-referenced coverage of drugs and therapeutic regimens used in general dental practice. They are presented in an easy-to-read style with sufficient detail for a practitioner to make sensible clinical decisions on a patient's needs and options with respect to common drugs used in modern dentistry. Interactions between a patient's

medical condition and therapy impacting on dental care have been reviewed in the light of contemporary best evidence and practice.

The sections on dental caries and periodontal diseases would seem very useful for medical and allied health clinicians, as too the specific section on 'management of dental problems for medical practitioners'. The use of fluorides in the 'dental caries' section however is already outdated, with the acceptance by the Therapeutic Goods Administration of over-the-counter fluoride toothpaste now containing up to 1500 ppm fluoride ion. Further, the use of high fluoride toothpaste containing 5000 ppm is now an accepted part of oral hygiene for dentate residents in residential aged-care facilities.<sup>1</sup>

These guidelines will be a useful reference for all oral health, medical and allied health clinicians.

## REFERENCE

1. Better Oral Health in Residential Care. Adelaide: SA Dental Service; 2009.

[www.health.gov.au/internet/main/publishing.nsf/Content/2DC945BED2046270CA25760E001E8B2E/\\$File/ProfessionalPortfolio.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/2DC945BED2046270CA25760E001E8B2E/$File/ProfessionalPortfolio.pdf) [cited 2012 Nov 8]