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Acne vulgaris is a long-term condition that can have lasting physical and psychological effects. Patient education is crucial to improve adherence to treatment

Therapeutic strategies for acne vulgaris

In this article...

- The aetiology of acne vulgaris
- How the condition is diagnosed and classified
- Guidelines on treatment and referral

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Abstract Lavers I (2013) Therapeutic strategies for acne vulgaris. *Nursing Times;* 109: 48, 16-18.

Acne is the most common skin condition worldwide and can have significant physical and psychological effects. Up to a third of those affected will require medical intervention to prevent irreversible scarring. This article provides general information about acne, introduces current guidelines and offers advice to help nurses support patient adherence to treatment.

Acne is a common skin condition that affects people of all ages, although it is most often seen in adolescence with the onset of puberty. It is the most common skin condition worldwide (Pommerville, 2010) and it is estimated the condition results in 3.5 million visits to primary care practitioners in the UK per year, and that 80-100% of individuals are affected at some point in their life (Buxton and Morris-Jones, 2009). Up to a third will require medical intervention to prevent post-inflammatory irreversible scarring (Zouboulis et al, 2009).

Acne affects the face, chest and back, which have a high density of sebaceous glands (Brown and Shalita, 1998). Symptoms vary from mild to severe and can last from three months to 40 years (Poulin et al, 2011). Irreversible scarring can occur. Patients can need long-term disease management and psychological support.

Acne is commonly diagnosed based on clinical findings; patients may present with any or all of the following symptoms and features:

- Greasy skin;
- Open and closed comedones (black-heads and whiteheads respectively);
- Inflamed lesions (papules, pustules and nodules);
- Post-inflammatory hyperpigmentation;
- Evidence of scarring.

Why does acne develop?

Acne is a disease of the pilosebaceus unit (PSU) and is associated with four pathogenic factors:

- Androgen-induced increased sebum production;
- Abnormal cell desquamation of skin cells in the hair follicle;
- Proliferation of *Propionibacterium acnes* and colonisation of the hair follicle;
- Inflammation caused by *P acnes*.

Hormones are the primary driver in the development of acne; in adolescence there is a natural increase of sex hormones, including androgen. In patients with acne, the male hormone androgen – which is present in both males and females – alters the function of the PSU, causing an over-production, and change in the consistency of sebum.

Androgen further alters the development of skin cells lining the PSU leading to hyperkeratinisation. Excessive sebum and hyperkeratosis lead to obstruction, and development of microcomedones in the PSU; these become open and closed comedones. If the blockage persists, colonisation with commensal bacteria leads to the release of inflammatory mediators, causing inflammation and the development of pus-filled acne lesions (Williams et al, 2012).

5 key points

1. **Acne is the most common skin condition worldwide**
2. **The condition can be mild to severe and can last for months or decades**
3. **Acne's long-term nature makes it difficult for some patients to adhere to treatment**
4. **Antibiotics should be prescribed carefully to avoid the development of antibiotic resistance**
5. **Patient education and management of expectations is crucial to increase the likelihood of adherence to treatment**

Acne occurs on a the face, back or chest, where there are more sebaceous glands

FIG 1. **ACNE SEVERITY**

Closed comedones (white) and open comedones (black). Inflammatory lesions are absent or few, making scarring unlikely

A mixture of several non-inflammatory comedones and inflammatory papules and pustules. Potential for post-inflammatory scarring and hyperpigmentation

Many inflammatory papules, pustules and nodules, with possible evidence of scarring. Scarring indicates previous moderate-to-severe acne and may warrant more aggressive treatment

Diagnosis

Diagnosis is based on medical history and physical examination. The presence of comedones is an essential diagnostic feature; the absence of comedones indicates that a disorder other than acne vulgaris should be considered (Roebuck, 2006), such as rosacea, perioral dermatitis and sebaceous hyperplasia. The patient's face, back and chest areas should all be checked at each consultation as severity may differ between areas.

Categorising acne by grade or severity (Fig 1) can aid diagnosis, management and prescribing (National Institute for Health and Care Excellence, 2013).

Acne variants

A number of acne variants exist:

- Childhood acne, including neonatal acne, infantile acne or early onset acne vulgaris;
- Acne conglobate, a serious form of inflammatory acne characterised by large cysts, large interconnecting comedones, draining abscesses and sinus tract formation;
- Acne fulminans, a rare variant usually affecting males, characterised by sudden onset of severely inflamed lesions, accompanied by systemic signs;
- Acne excoriee, essentially mild acne that has been picked or scratched.

Treatment

Acne treatment should be initiated as soon as possible – early treatment may prevent or minimise bacterial proliferation and spot formation. Treatment is based on addressing the cause as well as the symptoms and, while therapies are generally not complex, many patients struggle with their regimen and are disappointed with the lack of results. Health professionals should make time to explain to the patient how acne develops, and what treatment options are available to them and how these are used; they should also offer a realistic treatment plan the patient will be able to follow. Explaining that the condition may last for some time, even with treatment, and that perseverance is important may improve concordance and adherence to treatment.

Topical treatment aims to prevent the formation of new lesions and treats those already formed so all acne treatment regimens should consist of a fixed-dose topical treatment or combination of these. A systemic antibiotic should be added for patients with moderate to severe acne and those finding it difficult to reach areas of truncal disease. Oral isotretinoin is given as monotherapy to patients with severe acne, those at risk of scarring and those severely affected psychologically.

It is useful to consider the impact of acne on the patient's mood, adherence and motivation; the key to successful treatment is finding an effective, manageable and affordable plan that suits the patient. The European Dermatology Forum (2011) has comprehensive guidelines for acne treatment, setting out the different approaches for each level of severity (Table 1) and the psychological impact experienced.

The goal of current treatments is to target the four pathogenic factors of acne. The benefits of fixed-dosed or combined therapies include complementary mechanisms of action, reduced risk of antibiotic resistance, and improved treatment outcomes, thereby improving ease of application and patient adherence by simplifying daily regimens (Dawson and Dellavalle, 2013). An awareness of how the different drugs work is essential to the process of selecting treatment (Box 1).

Antibiotic resistance

Antibiotic resistance is a growing concern and has prompted efforts to limit the duration of antibiotic courses and to emphasise combined regimens. In practice, this means avoiding topical as well as systemic antibiotic monotherapy and maintenance therapy. Courses of topical antibiotics should be limited to 12 weeks' duration where possible, while use of a topical antibiotic combined with oral antibiotics should be avoided (Dawson and Dellavalle, 2013).

Patient education

Patients should be offered individualised care and advice to enhance treatment outcomes. The following advice applies to all types of acne:

- Avoid picking at spots as this can cause permanent damage and scarring;
- Vigorous washing and scrubbing can irritate the skin and exacerbate acne – wash the skin with a gentle skin cleanser twice daily;
- Topical therapies can cause irritation of the skin and bleaching of fabrics. Use no more than the suggested amount of treatment; it can be beneficial to initially apply treatment on alternate days or even every third day allowing the skin to get used to it. Topical treatment is generally applied in the evening so a white T-shirt, white towels and bedding will overcome the problem of bleaching;
- Use cosmetics, toiletries and sunscreens that do not clog pores – these may be labelled non-comedogenic or oil-free;
- Use medication as directed and allow time to take effect; this may be several weeks or months. All previously purchased acne treatments should not be used unless the health practitioner specifies this is the case.

There is little evidence that food causes acne – a balanced diet is generally advised. Some research suggests a diet with a low

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TABLE 1. ACNE TREATMENTS

Acne severity	Strength of recommendation: medium	Highly recommended	Alternatives for females
Mild acne	● Topical retinoids (adapalene to be preferred over tretinoin/isotretinoin)	n/a	–
Moderate acne	● Azelaic acid ● Benzoyl peroxide ● Topical retinoid ● Systemic antibiotic (doxycycline and lymecycline) + adapalene	● Adapalene + benzoyl peroxide (FDC) ● Benzoyl peroxide + clindamycin (FDC)	–
Severe acne	● Systemic antibiotics (doxycycline and lymecycline) + adapalene ● Systemic antibiotics (doxycycline and lymecycline) + azelaic acid ● Systemic antibiotics (doxycycline and lymecycline) + adapalene + benzoyl peroxide (FDC)	● Isotretinoin	● Hormonal antiandrogens + topical treatment ● Hormonal antiandrogens + systemic antibiotics

Source: European Dermatology Forum (2011). FDC = fixed-dose combination

glycaemic index is beneficial, although further research is needed (Steventon and Cowdell, 2013).

Good patient education is important to ensure adherence to treatment, and particularly so for pre-teens and adolescents, who have the greatest difficulty with this, especially when it is long term (Baldwin, 2006; Eichenfield et al, 2005). Providing easy-to-use products and managing expectations is key to successful treatment.

BOX 1. MODE OF ACTION FOR ACNE TREATMENTS

Topical retinoids
- Normalise desquamation
- Reduce inflammatory response
- Inhibit microcomedone formation

Antibiotics
- Kill microorganisms
- Reduce inflammatory response

Benzoylperoxide
- Kills microorganisms
- Keratolytic

Oral isotretinoin
- Reduces sebum
- Normalises desquamation
- Inhibits *Propionibacterium acnes*
- Reduces inflammatory response

Hormones
- Reduce sebum production (combined oral contraceptive regimens regulate androgens by preventing a cyclical progesterone surge)

Source: Poulin (2004)

Patients with acne can become so concerned about their appearance that they can develop body dysmorphia (Schofield et al, 2009). Even mild-to-moderate disease can be associated with significant depression and suicidal ideation; psychological effects do not necessarily correlate to disease severity (Savage and Layton, 2010).

Effective support for patients with acne, particularly before treatment takes effect, should involve considering and acting on:
- The psychological impact of disease on the patient;
- Whether the patient will be able to adhere to the suggested treatment;
- The patient's understanding of the suggested treatment;
- The patient's understanding of possible side-effects and their management;
- The patient's motivation and expectations of treatment.

Conclusion

Timely intervention, correct treatment and adherence to that treatment are key to successfully treating acne and avoiding long-term psychological effects and physical scarring. Patients should be referred to a dermatologist if the psychological impact becomes a concern or they show no response to treatment.

Fixed-dose combination therapy is recommended to aid treatment success and adherence, and prudent time-limited use of antibiotics is recommended to prevent antibiotic resistance. Neither topical nor systemic montherapy is recommended.

Evidence-based guidance will allow health professionals to plan and review acne treatment to manage this long-term condition effectively and minimise its long-term effects. **NT**

● **Conflict of interest** Isabel Lavers is employed by Galderma UK but this article was written in the capacity of her clinical role, working for Salford Royal Foundation Trust. This article has not been endorsed by Galderma UK.

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