Acne

Best practice management

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Background
Acne vulgaris can have a substantial impact on a patient's quality of life; there can be significant psychosocial consequences and it can leave permanent physical scarring. Early and effective acne treatment is important.

Objective
To describe the outcome of an accredited clinical audit investigating general practitioner management of acne vulgaris and to provide an outline of current 'best practice' acne management.

Discussion
The audit was conducted over two cycles with GPs receiving educational material between cycles. Eighty-five GPs contributed data on 1638 patients. General practitioner management of acne was assessed against a set of preset standards and some acne treatment was found to be inconsistent with best practice, particularly for patients with moderate and moderate to severe acne, where many patients were either being undertreated or treatment with antibiotic therapy was suboptimal. It is likely that this treatment gap is overestimated due to practical limitations of the audit process; however, the audit revealed a need to address the main sources of apparent divergence from best practice to improve the quality use of acne therapies.

Keywords: education, medical, continuing; clinical audit; quality of health care; skin diseases, acne vulgaris

Acne vulgaris is a very common skin disease experienced by nearly all adolescents and can have a substantial impact on quality of life.[1,2] Even though acne may seem trivial, the psychosocial consequences can be profound[3] and severe disease can leave permanent physical scarring.[4,5] Early and effective acne treatment can prevent or minimise such complications.[6]

The authors conducted a clinical audit, accredited by The Royal Australian College of General Practitioners (RACGP), to investigate general practitioner management of acne vulgaris.

The audit

The audit was prospective, fixed time and conducted online following the RACGP's five step audit procedure. General practitioner participation in the audit was voluntary, with advertising, direct mail and personal invitation used to recruit GPs.

General practitioners were provided with quantitative questionnaires and were required to evaluate their management of acne in 25 adolescent patients who had visible acne over two audit cycles (15 patients in cycle 1 [C1] and 10 patients in cycle 2 [C2]). The type and scope of data collected is summarised in *Figure 1*.

An education committee (comprising eight GPs) assisted with the development of the audit, determining the five standards of care and setting the acceptable levels for GP assessment (*Table 1*).

Following completion of C1, GPs were sent an individual performance report and a brief education report discussing the initial audit findings and giving advice on best practice management. After having appropriate time to reflect on their results (at least 3 months), GPs conducted C2. On completion of C2, GPs received a second individual performance report.

To assess the quality use of medicines, current acne therapy was compared to a treatment algorithm that represents best practice (*Table 2*) as identified from a systematic search of the literature.[7,8] If the treatment prescribed by the GP matched that recommended by the algorithm, it was considered consistent or 'appropriate' (*Table 3*) and if not, treatment was considered to be inconsistent. This assessment is likely to overestimate the number of patients whose therapy is inconsistent with best practice because reasons for deviation were not investigated. Therefore, appropriate reasons for

which therapy differed from the algorithm, such as issues of tolerability and patient choice, are not accounted for.

The audit revealed that GPs are discussing acne, assessing severity and evaluating its psychosocial impact at a frequency above the preset acceptable standards (*Table 1*). However, their pharmacological management of acne was found to be inconsistent with best practice in approximately half of all patients. The most common divergences were:

- concurrent use of topical and oral antibiotics
- use of antibiotics without benzoyl peroxide (BPO) to reduce the risk of resistance
- undertreatment, or nontreatment, of acne.

Here, we address the main sources of GP divergence from best practice and discuss the implications for the quality use of medicines.

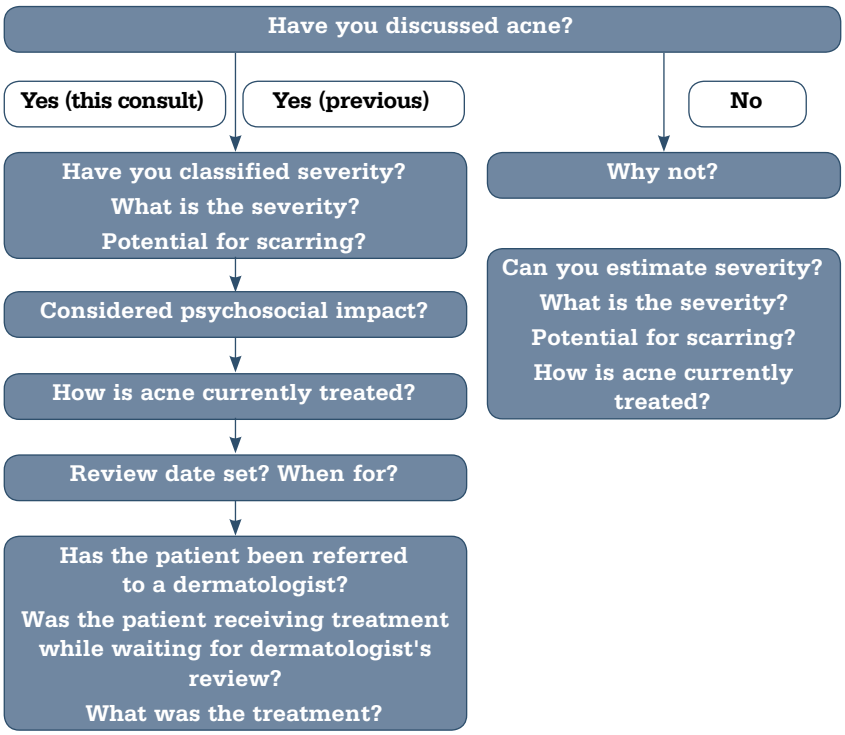

Figure 1. A schematic flow diagram summarising the data that was collected in the audit

Table 1. Aggregated performance results of GPs in both cycles compared to the acceptable standards

Acceptable standards	Cycle 1 (%) (n=1067)	Cycle 2 (%) (n=571)	*p* value
GP has at some point had a discussion about acne with 80% of adolescent patients with visible signs of acne	86.9	90.1	0.11
As part of routine care, GP has assessed severity of acne in 80% of adolescent patients with visible signs of acne	97.2	98.1	0.21
As part of routine care, GP has discussed the psychosocial impact of acne in 50% of adolescent patients with visible signs of acne	62.2	70.3	<0.05
GP has offered appropriate acne treatment (after considering the severity, the likelihood of scarring, and the psychosocial impact of acne) to 70% of adolescent patients with visible signs of acne	45.3	49.0	0.11
GP should routinely review acne treatment (within 12 weeks) in 85% of patients for whom treatment has been prescribed or recommended	69.1	81.2	<0.05

Treatment of acne

Identification of acne severity is determined by specific clinical features. The severity of acne plays a major role when it comes to determining the most appropriate acne treatment. Optimal use of medication involves understanding the specific clinical features and lesion types that identify the different degrees of acne severity (*Table 4*).[8]

Considerations before treatment

Acne is one sign of androgenisation in women. If present with hirsutism, obesity or menstrual irregularity, endocrine evaluation is warranted. Occupational exposures to halogens, industrial oils, and hot, humid working environments can contribute to acne.[9] Where possible, exposure to aggravating factors should be avoided or minimised. Patient education is key and common myths should be addressed (*Table 5*).

Psychosocial assessment

Acne can have a significant emotional and social impact. It can cause, or be a contributing factor to, social isolation, distorted body image, poor self confidence, depression and suicidal ideation. These negative consequences don't necessarily correlate with acne severity;[9] therefore psychosocial impact should be assessed in all patients. Start with open ended questions such as, 'How do you feel about your acne?' and address issues that arise.

Mild acne

The course of treatment is determined by acne severity, but even mild forms of acne should be treated. Appropriate treatment for mild forms involves a topical monotherapy such as salicylic acid, retinoids or BPO. Topical antibiotic may be

Table 2. Acne treatment algorithm[7,8]

	Mild		Moderate	Moderate to severe	Severe
	Comedonal	Papular/pustular			
First line therapy	Topical retinoid	Topical retinoid + BPO or BPO/topical AB	BPO/topical AB or Topical retinoid + BPO	Topical AB + BPO + topical retinoid or Oral AB + BPO + topical retinoid	Oral isotretinoin
Alternatives	Salicylic acid			Oral isotretinoin	Oral AB + topical retinoid + BPO or BPO/topical AB
Alternatives for female patients			Hormonal therapy ± BPO/topical AB or Topical retinoid	Hormonal therapy ± BPO/topical AB or Topical retinoid	Hormonal therapy + oral AB + topical retinoid ± BPO or BPO/topical AB
Maintenance therapy	Topical retinoid ± BPO or BPO/topical AB		Topical retinoid ± BPO or BPO/topical AB	Topical retinoid ± BPO or BPO/topical AB	Topical retinoid ± BPO or BPO/AB

BPO = benzoyl peroxide; AB = antibiotic

Table 3. 'Appropriate' treatment by acne severity

Patients receiving appropriate treatment	Cycle 1 (%)	Cycle 2 (%)	*p* value
Mild	74.8	80.6	NS
Moderate	32.3	35.2	NS
Moderate to severe	13.6	20.8	NS
Severe	37.1	57.9	NS

added after 6 weeks in mild inflammatory acne if no improvement is seen, but should be used in conjunction with BPO to prevent antibiotic resistance.[10,11]

Moderate acne

Moderate acne should also be treated with topical agents. Topical retinoids are the main treatment for comedonal or mild papulopustular acne. However, as the inflammatory component increases so does the role of antibiotic therapy, including fixed dose combinations containing BPO.

Topical antibiotic therapy (and/or combination with 5% BPO) should be used for a 6 week period, with the therapy applied to the whole area of the affected skin, not just the infected lesions.[9] Female patients also have the option of oral contraceptive therapy.[12] However, hormonal therapy should be used in addition to a topical therapy to achieve optimal results.

Moderate to severe acne

Moderate to severe acne should be treated with topical retinoid (eg. 0.05% or 0.1% tretinoin)[9] plus topical BPO and a topical antibiotic. Alternatively, an oral antibiotic can be prescribed. If there is no response to the antibiotic by 6 weeks, or if the acne improves and then relapses, consider changing the antibiotic.[9] If no improvement is seen, consider supplementing therapy with antiandrogen in females. Advice from a dermatologist should be sought (*Table 2*).

Severe acne

Severe acne can initially be treated in the same manner as moderate to severe acne. However, if response to therapy is inadequate, or there is a risk of scarring, or the acne is psychosocially debilitating, referral to a dermatologist is recommended. In this case, the systemic retinoid, isotretinoin, is the treatment of choice.[9]

When topical or systemic retinoids are being used, avoid the use of a second retinoid, concomitant tetracyclines and photosensitising agents, such as nonsteroidal anti-inflammatory drugs (NSAIDs), due to the increased risk of adverse events. Females must have adequate contraception, with the concurrent use of barrier and systemic contraceptives the recommended option.

Table 4. Clinical characteristics of the various degrees of acne severity[8]

Mild acne Primarily composed of noninflammatory lesions or comedones. These may be open and/or closed and present as clogged pores (blackheads or whiteheads) Some papules (red pimples) may also be present	
Moderate acne Contains both noninflammatory comedones as well as inflammatory lesions including papules and a few pustules (pimples with a white top)	
Moderate to severe acne Characterised by numerous comedones, pustules and papules. A few cysts (large pus filled inflammatory lesions >5 mm in diameter) or nodules (cysts that have ruptured) may also be present	
Severe acne Characterised by both inflammatory and noninflammatory symptoms as described above but with the presence of numerous nodules and/or cysts Nodules and cysts are often painful and found on the face, neck and upper trunk, and sometimes extend to the waistline	

The role of antibiotics in the management of acne

Propionibacterium acnes are believed to play a major role in the pathogenesis of acne vulgaris. Suppressing *P. acnes* with the use of oral or topical antibiotics plays an integral role in the management plan of patients with moderate, and moderate to severe acne (and acne of lesser severity that is refractory to other treatments) where both noninflammatory and inflammatory pathways are involved. Topical antibiotics are highly effective[13] with topical clindamycin and erythromycin having similar efficacy.[14]

Oral antibiotic therapy should be restricted to patients with moderate to severe, and severe acne. Doxycycline is the agent of first choice, while minocycline use is limited by poorer tolerability – tetracyclines are contraindicated in children and in pregnancy. Due to photosensitivity reactions, patients taking tetracyclines should be counselled on sun exposure. Oral erythromycin is reserved for patients who can't take tetracyclines.[14] The efficacy of therapy should be reviewed after 6–8 weeks and if no improvement is observed, a change in oral antibiotic should be made. When acne is under reasonable control, oral antibiotic therapy should cease with the topical treatment regimen of retinoids (with or without the addition of topical antibiotics plus BPO) being continued for another 3–6 months for maintenance.[15] Concomitant use of oral and topical antibiotics offers no benefit as they possess no synergistic action and combined use may lead to antibiotic resistance.[12]

Risk of antibiotic resistance

A major drawback with the use of antibiotics is the possible development of antibiotic resistance. A restricted range of topical antibiotic formulations are available, therefore responsible use and limited courses of topical antibiotics are advised.[13] A 10 year surveillance study found the prevalence of antibiotic resistance has increased. Resistance to erythromycin is most common, followed by clindamycin, with little increase in tetracycline resistance.[16]

Concurrent use of BPO and antibiotics

The addition of BPO to topical antibiotic therapy has been shown in several studies to prevent the development of bacterial resistance.[10,11] The concurrent use of BPO is now considered the primary strategy to prevent resistance to topical antibiotics. The concurrent use of BPO was previously recommended if oral antibiotic therapy extended beyond 2 months; however, the use of BPO from the beginning of treatment is now advised.[15] While topical retinoids are commonly used in the treatment of acne, there is no evidence to suggest that they exhibit a preventive effect on the development of antibiotic resistance.[13]

Conclusion

The clinical audit revealed there is scope for improvement in GP management of acne. It also highlighted the need for the development of less complicated treatment regimens in order to simplify management of acne. General practitioners need to consider not only the physical signs of acne but also the psychosocial impact, independent of acne severity. Treatment needs to be tailored to the individual and must consider issues of therapeutic adherence. Follow up appointments are essential to monitor disease progress and effectiveness of prescribed therapy. Early and effective treatment of acne is key to preventing scarring and minimising psychosocial implications.[6] If the patient's condition is not responding to treatment, referral to a dermatologist should be sought before the condition progresses and becomes increasingly difficult to manage.

Future audits might investigate how the management of acne changes over time to better assess the appropriateness of current therapy and whether dermatologist referral is timely.

Table 5. Patient education and myth busting[1,9]

General advice on acne	Myth busting
• Do not squeeze acne lesions – it can increase severity of inflammation – it can increase the risk of scarring	• Sexual activity does not influence acne – although acne is related to androgen metabolism at the level of sebaceous glands there is no link between sexual activity and acne
• Use a mild skin cleansing regimen – low irritant, pH-balanced, soap free cleanser twice daily	• Blackheads are not due to dirt – excessive washing can be counterproductive – functional blockage of pores by excess sebum is at a depth well beyond washing
• Eat a healthy diet – diet has not been directly linked to causing acne – there is some suggestion that dairy products and a high glycaemic index diet may worsen acne in some individuals	• Chocolate and fatty foods do not cause acne
• Avoid overexposure to the sun – although some patients report acne improves over summer, UV light is not an acne treatment – many acne treatments make the skin more prone to sunburn – use a noncomedogenic SPF 30+ broad spectrum sunscreen	• Hair and hairstyles – irregular or infrequent shampooing does not predispose to acne – leaving hair long, greasy or wearing hair over the face has no influence on acne
• Stress plays a role in acne exacerbations	• Most cosmetics are noncomedogenic – cosmetics are now an uncommon cause of acne – avoid cosmetics that contain isopropyl myristate

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Conflict of interest: this clinical audit was sponsored by Stiefel, A GSK Pharmaceutical Company. David Cook declared no conflict of interest. George Krassas of Scius Solutions, the education provider, was funded by Stiefel to design, develop and implement the clinical audit as well as to aid the preparation of this manuscript. Tom Hsun-Wei Huang is an employee of Stiefel, A GSK Pharmaceutical Company.

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