

**** FDA Safety and Adverse Event Warning****

**Carbamazepine and Patients of Asian Ancestry
(Carbatrol®, Equetro®, Tegretol®, and generics)**

On December 12, 2007, the Food and Drug Administration (FDA) issued a Safety Information and Adverse Event Report regarding the use of Carbamazepine and the development of dangerous and even fatal skin reactions (Steven Johnson syndrome and toxic epidermal necrolysis) in patients with a particular human leukocyte antigen (HLA) allele, HLA-B*1502. The HLA-B*1502 allele occurs almost exclusively in patients with ancestry across Asia, including South Asian Indians.

The FDA is recommending that patients of Asian ancestry be screened for the presence of the HLA-B*1502 allele before starting treatment with Carbamazepine. If the test is positive, then therapy with Carbamazepine should not be used unless the expected benefit clearly outweighs the increased risk of serious skin reactions.

Patients who have been taking Carbamazepine for more than a few months without developing skin reactions are at low risk for these events, even for patients of any ethnicity or genotype, including patients positive for the HLA-B*1502 allele.

For more information, please refer to the information listed on the Food and Drug Administration's Web site.

<http://www.fda.gov/medwatch/safety/2007/safety07.htm#carbamazepine>



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Health Care Guideline

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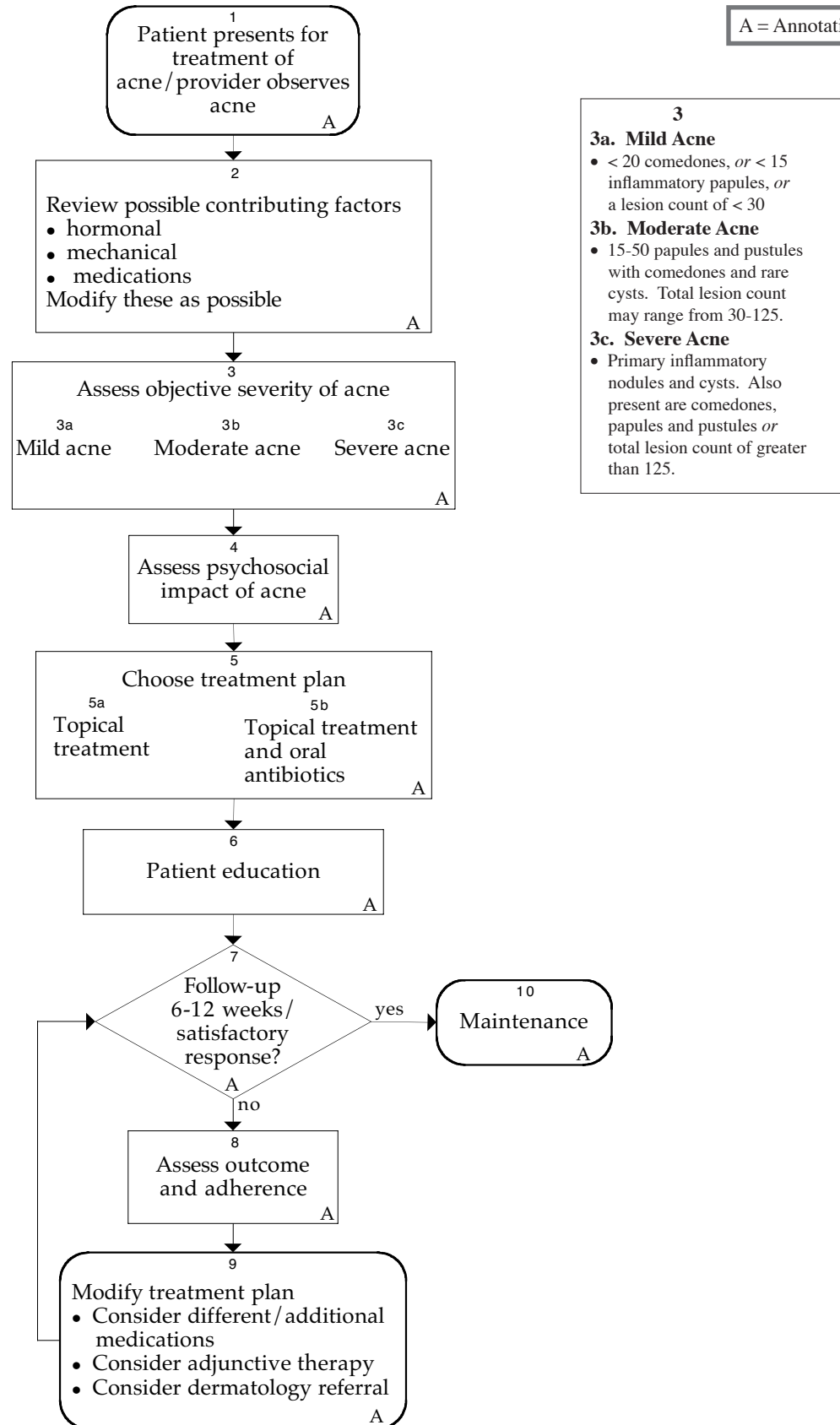
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These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.

A = Annotation



3

3a. Mild Acne
• < 20 comedones, or < 15 inflammatory papules, or a lesion count of < 30

3b. Moderate Acne
• 15-50 papules and pustules with comedones and rare cysts. Total lesion count may range from 30-125.

3c. Severe Acne
• Primary inflammatory nodules and cysts. Also present are comedones, papules and pustules or total lesion count of greater than 125.

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Foreword

Scope and Target Population

This guideline addresses the management of acne vulgaris for all patients. It emphasizes initial diagnosis and treatment options. It provides clinical guidance especially to primary care physicians. Treatment of rare forms of acne and of refractory disease are not included except to indicate when referral is appropriate. This guideline excludes rosacea and folliculitis.

Clinical Highlights and Recommendations

- Patient perception of improvement is the best measure of successful treatment. (*Annotation #4*)
- Although acne is not a life threatening disease, the clinician must be aware of potentially debilitating psychosocial effects. (*Annotation #4*)
- Treatment with both a topical retinoid and a topical antibiotic has been found to be an effective course of treatment. (*Annotation #5*)
- Customize a treatment plan that the patient will be able to follow according to his/her needs. (*Annotations #6, 8*)
- The patient needs to understand that acne may get worse before it gets better. It typically takes eight weeks of treatment before a response is noted. (*Annotation #7*)
- Isotretinoin therapy is highly regulated. (*Annotation #9*)

Priority Aims

1. Improve the selection of appropriate treatment for patients with acne based on severity.
2. Increase the number of patients who report satisfaction with the treatment of their acne.
3. Increase the number of patients with appropriate follow-up for acne treatment.

Related ICSI Scientific Documents

Patient and Family Guidelines

- Acne Management for Patients and Families

Evidence Grading

Individual research reports are assigned a letter indicating the class of report based on design type: A, B, C, D, M, R, X.

Key conclusions are assigned a conclusion grade: I, II, III, or Grade Not Assignable.

A full explanation of these designators is found in the Supporting Evidence section of the guideline.

Disclosure of Potential Conflict of Interest

In the interest of full disclosure, ICSI has adopted the policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform readers. Readers of the guideline may assume that only work group members listed below have potential conflicts of interest to disclose.

No work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at <http://www.icsi.org>.

Algorithm Annotations

1. Patient Presents for Treatment of Acne/Provider Observes Acne

When presented with acne in office visit scheduled for other reason, identify comfort with condition and desire for treatment.

2. Review Possible Contributing Factors

Hormonal

Signs of androgen excess would include:

- Precocious puberty
- Hirsutism

Possible causes of androgen excess would include:

- Polycystic Ovary Disease
- Adrenal Tumor
- Ovarian Tumor
- Pituitary tumor

Mechanical

On occasions physical occlusion may contribute to acne. For example: hockey masks; oil based cosmetics (although most cosmetics today are water based).

Supporting evidence is of classes: D, R

Medications

There are many medications that may contribute to the development of acne. In addition to treating the acne, consideration may be given to discontinuing these medications.

(Basler, 1992; De Raeve, 1995; Marcoux, 1998; Mills, 1975; Witchel, 2002)

Supporting evidence is if classes: D, R

| Medications Which May Contribute to the Development of Acne | | | | |
|--|-----------------|--|------------------|------------------|
| ACTH | CLOMIPRAMINE | FOSPHENYTOIN | NARATRIPTAN | RIFAMPICIN |
| ACTINOMYCIN D | CORTICOSTEROIDS | GABAPENTIN | NEFAZODONE | RIFAPENTINE |
| ACYCLOVIR | CREATINE | GANCICLOVIR | NIMODIPINE | RISPERIDONE |
| ALOSETRON | CYANOCOBALAMI | GOLD and GOLD COMPOUNDS | NISOLDIPINE | RITONAVIR |
| ALPRAZOLAM | CYCLOSPORINE | GRANULOCYTE COLONY-STIMULATING FACTOR (GCSF) | NIZATIDINE | SAQUINAVIR |
| AMITRIPTYLINE | DACTINOMYCIN | GREPAFLOXACIN | NORTRIPTYLINE | SERTRALINE |
| AMOBARBITAL | DANAZOL | HALOPERIDOL | OLSALAZINE | SIBUTRAMINE |
| AMOXAPINE | DANTROLENE | HALOTHANE | OXCARBAZEPINE | SIROLIMUS |
| ANDROSTENEDIONE | DEFEROXAMINE | HEROIN | PANTOPRAZOLE | SMALLPOX VACCINE |
| ATORVASTATIN | DEMECLOCYCLINE | IMIPRAMINE | PARAMETHADIONE | SPARFLOXACIN |
| AZATHIOPRINE | DESIPRAMINE | INTERFERONS, ALFA-2 | PAROXETINE | STANOZOLOL |
| BASILIXIMAB | DIAZEPAM | ISONIAZID | PENTOBARBITAL | TACRINE |
| BETAXOLOL | DILTIAZEM | LAMOTRIGINE | PENTOSTATIN | TESTOSTERONE |
| BEXAROTENE | DISULFIRAM | LANSOPRAZOLE | PERGOLIDE | THIOURACIL |
| BISOPROLOL | EFLORNITHINE | LEFLUNOMIDE | PHENOBARBITAL | THIOUREA |
| BUPROPION | EPOETIN ALFA | LEUPROLIDE | PHENYTOIN | TIAGABINE |
| BUSPIRONE | ESMOLOL | LEVOTHYROXINE | POTASSIUM IODIDE | TIZANIDINE |
| BUTABARBITAL | ESOMEPRAZOLE | LITHIUM | PREDNISONE | TOPIRAMATE |
| CABERGOLINE | ESTAZOLAM | MAPROTILINE | PRIMIDONE | TRIMETHADIONE |
| CARBAMAZEPINE | ETHAMBUTOL | MDMA | PROGESTINS | TRIOXSALEN |
| CARTEOLOL | ETHIONAMIDE | MEDROXYPROG-ESTERONE | PROPAFENONE | TROVAFLOXACIN |
| CEFAMANDOLE | FAMOTIDINE | MEPHENYTOIN | PROPRANOLOL | VALPROIC ACID |
| CEFPODOXIME | FELBAMATE | MESALAMINE | PROPYLTHIOURACIL | VENLAFAXINE |
| CEFTAZIDIME | FENOPROFEN | METHOTREXATE | PROTRIPTYLINE | VERAPAMIL |
| CETIRIZINE | FEXOFENADINE | METHOXSALEN | PSORALENS | VINBLASTINE |
| CHLORAL HYDRATE | FLUCONAZOLE | METHYLTESTOSTERONE | PYRAZINAMIDE | VITAMIN B12 |
| CHLOROTRIANISENE | FLUOXETINE | MINOXIDIL | PYRIDOXINE | ZALCITABINE |
| CIDOFOVIR | FLUOXYMESTERONE | MIRTAZAPINE | QUINIDINE | ZALEPLON |
| CIMETIDINE | FLUVOXAMINE | MYCOPHENOLATE | QUININE | ZIDOVUDINE |
| CIPROFLOXACIN | FOLIC ACID | NABUMETONE | RAMIPRIL | ZOLPIDEM |
| CLOFAZIMINE | CLOMIPRAMINE | NAFARELIN | NALTREXONE | ZONISAMIDE |
| CLOMIPHENE | FOSCARNET | NALTREXONE | RIBOFLAVIN | |

3. Assess Objective Severity of Acne

Acne severity is the most important clinical diagnostic tool in studies reviewed. For simplification, this group is following the Agency for Healthcare Research and Quality's (AHRQ) recommendation to divide acne into three severity grades: mild, moderate and severe (*Agency for Healthcare Research and Quality, 2001*). There are a number of other ways of grading acne that are used clinically and in research. None, however, are universally accepted. Additionally, psychological impact or the presence of scarring may play a role in assigning a severity grade to the patient (*Rabinowitz, 1997*).

The following diagnostic tool was designed as a guideline for three lesion counts on the face but may be applicable to grading the severity of acne on the trunk as well.

a. Mild Acne:

Mild acne is characterized by predominance of comedones (fewer than 20), *or* less than 15 inflammatory papules, *or* a comedone/papule count of less than 30 on the face.

Algorithm Annotations

b. Moderate Acne:

Moderate acne predominantly exhibits papules and pustules (about 15-50 lesions) with comedones and rare cysts. Total lesion (comedone, papule, pustule) count may range from 30-125 on the face.

c. Severe Acne:

Severe acne is characterized primarily with the presence of inflammatory nodules and cysts. Also present are comedones, papules and pustules *or* total lesion count of greater than 125 on the face.

Definitions:

- **Closed Comedone** (whitehead): non-inflamed (non-red) follicular opening containing a keratotic plug with a thin overlying epidermal membrane.
- **Open Comedone** (blackhead): non-inflamed (non-red) follicular opening containing a keratotic plug that appears black.
- **Papule**: small round to oval red elevation of the skin (1-4 mm).
- **Pustule**: resembles a papule with a central pocket of pus.
- **Nodule/Cyst**: poorly margined red tender, sometimes draining 0.2-3.0 cm indurated mass in the skin

Supporting evidence is of classes: M, R

4. Assess Psychosocial Impact of Acne

It is important to assess the psychosocial effect of acne. Studies using "quality of life" surveys show a variety of significant impacts – most frequently, anxiety and depression. Decreased self-esteem, social withdrawal, anger, conduct disorders and decreased employability have been reported in other studies. The clinical severity of the acne does not always predict the severity of the psychosocial impacts. Effective treatment of acne can decrease these negative effects.

If significant psychosocial effects are present, consider a more aggressive initial treatment (such as combination therapy and closer follow-up) than might be indicated by the objectively observed severity alone. Patient perception of improvement is the best measure of successful treatment.

(Kellett, 1999; Klassen, 2000; Koo, 1995; Layton, 2001; Mallon, 1999; Martin, 2001; Smithard, 2001; Tan, 2001)

Supporting evidence is of classes: C, D, R

5. Choose Treatment Plan

There are multiple treatment modalities that have been demonstrated effective in the treatment of acne. [Conclusion Grade I: See Conclusion Grading Worksheet A – Annotation #5 (Choose Treatment Plan)]

Resistance to antibiotics is rising but does not appear to decrease effectiveness of treatment (Ozolins, 2004). [Conclusion Grade II: See Conclusion Grading Worksheet B – Annotation #5 (Resistance to Antibiotics)]

Algorithm Annotations

When initiating treatment it is important to consider the goals of therapy. Treatment goals should include:

- achieving clearance of acne
- prevention of scarring
- learning to cope with psychological stress resulting from the acne

Considerations:

- Patient skin type (oily to dry)
 - for very oily skin consider a gel or solution
 - for very dry skin choose creams or lotions
- If more than one topical is being used (for example a retinoid and a topical antibiotic), have patient apply one in the morning and the other at night.
- If multiple agents are used, they should be from different classes. For example, a benzoyl peroxide and a topical antibiotic.
- Customize treatment to enhance adherence. For example, can the patient reach their back to apply the product? Importance of avoiding food, especially dairy products, one hour before or two hours after taking tetracycline.

Relative Cost Value

Costs for treatment modalities may vary significantly and should be considered in treatment selection. The table below shows the cost ranges and key for a 30 day supply. It applies to treatments discussed in this section of the guideline.

\$ = \$1.00 - \$20.99

\$\$ = \$21.00 - \$40.99

\$\$\$ = \$41.00 - \$60.99

\$\$\$\$ = \$61.00 - \$99.99

\$\$\$\$\$ = \$100.00+

a. Topical Treatment of Acne

An example of treatment for mild acne may include benzoyl peroxide, a topical antibiotic or a combination product one to two times daily; or a topical retinoid once daily in addition to the above. See tables in this annotation for description of medications.

Over-the-counter Topical Products

A wide variety of over-the-counter (OTC) topical products are available to the patient for self-treatment of acne. A complete listing is beyond the scope of this publication. The most common ingredient in OTC products is benzoyl peroxide in concentrations up to 10%*. Salicylic acid in concentrations of 0.5% to 2% is a keratolytic found in many OTC acne products. Products may also contain glycolic acid (an alpha-hydroxy acid), sulfur, or resorcinol. **When evaluating a new patient, it is helpful to know which products they may have tried.**

* Many of the expensive acne systems advertised contain benzoyl peroxide and offer no advantages over commercial products.

Algorithm Annotations

Benzoyl Peroxide

Benzoyl Peroxide is available without a prescription in products such as Clearasil® and by prescription in the products listed below. It is also available in combination with antibiotics (see Topical Antibiotics table.)

| Medication* (e.g., brand name) | Formulations | Directions | Cost** | Comments |
|---|---|---|------------------------------|---|
| Benzoyl peroxide (Benzac®, Brevoxyl, Desquam-X®, PanOxyl®, generics) | Bar soap 5-10% Cleanser 10% Cream 10% Gel 2.5-20% (alcohol or water based) Liquid 2.5-10% Lotion 5-10% | Cleansers: wash once or twice daily Other: apply once or twice daily | \$\$ generic \$\$\$ brand | <ul style="list-style-type: none"> • in addition to bactericidal activity against P.acnes, benzoyl peroxide inhibits new comedone formation, reduces follicular lipids and free fatty acids, causes mild desquamation • local irritation is the most frequent side effect • contact allergy possible but rare • bleaches hair and fabrics |

* Brand names are included for reference only and are not meant to be all-inclusive.

** The cost shown is the average drug cost for a 30-day supply.

Algorithm Annotations

Topical Retinoids for Acne

Topical retinoids (see table below) increase the turnover of follicular epithelial cells, promote drainage of comedones and inhibit new comedone (blackhead, whitehead) formation. Topical retinoids are generally applied in the evening.

Topical Retinoids

| Medication * (e.g., brand name) | Formulations | Dose/Directions | Cost ** (pkg size) | Comments |
|-------------------------------------|--|-------------------------------------|-----------------------|--|
| Adapalene (Differin®) | Cream 0.1% Gel 0.1% Solution 0.1% | Apply once daily at bedtime. | \$\$\$\$ | <ul style="list-style-type: none"> side effects are erythema, dryness, burning. Minimize by applying 30-45 minutes after washing, start with lower strength formulations and consider application every 3rd or alternate nights to start. Tazarotene may be effective with short contact therapy, 5 minutes or less of contact. topical retinoids should not be used in pregnancy liquid and gel forms tend to be more drying than creams photosensitizing, sunscreen SPF 15-30 is recommended. improvement can be delayed 1-3 months after beginning therapy, some patients notice clinical worsening 2-4 weeks into treatment adapalene (Differin®) may be less irritating tazarotene (Tazorac®) tends to be more irritating new formulations (Retin-A Micro®) are designed to be more emollient and less penetrating which may lessen irritation |
| Tazarotene (Tazorac®) | Cream 0.05% 0.1% Gel 0.05% 0.1% | Apply once daily in the evening. | \$\$\$\$\$ | |
| Tretinoin (Retin-A® generics) | Cream 0.025% 0.05% 0.1% Gel 0.01% 0.025% Liquid 0.05% | Apply once daily at bedtime. | \$\$\$ | |
| Tretinoin (Retin - A Micro®) | Gel 0.04% Gel 0.1% (slow release delivery system) | Apply once daily at bedtime | \$\$\$\$ | |

* Medications are listed alphabetically.

** The cost shown is the average drug cost for a 30-day supply.

Algorithm Annotations

Azelaic Acid

Azelaic acid is a naturally occurring decarboxylic acid which has been shown to be effective in reducing both inflammatory and non-inflammatory acne lesions.

| Medication (e.g., brand name) | Formulations | Directions | Cost* | Comments |
|-------------------------------|--------------|--------------------|--------|--|
| Azelaic Acid (Azelex®) | Cream 20% | Apply twice daily. | \$\$\$ | <ul style="list-style-type: none"> • has both comedonal and anti-bacterial action • may decrease post inflammatory hyperpigmentation • local irritation, pruritis and burning may occur |

* The cost shown is the average drug cost for a 30-day supply.

Topical Antibiotics for Acne

Propionibacterium acnes (P.acnes) is an anaerobic bacterium present within the pilosebaceous follicles. It is thought that this microorganism plays a role in acne-associated inflammation. The antibiotics used to treat acne have been shown to reduce colonization of P.acnes and may also possess direct anti-inflammatory effects. Invitro resistance of P.acnes to commonly used antibiotics has been increasing but the clinical significance of this is uncertain. However, it has been recommended that antibiotics be used with either topical retinoids or benzoyl peroxide.

Single drug products

| Medication (e.g., brand name) | Formulations | Directions | Cost** | Comments |
|--|--|---------------------------|----------------|---|
| Clindamycin (Cleocin T®, Evoclin generics) | Foam 1% (brand only) Gel 1% Lotion 1% Pads 1% (brand only) Solution 1% | Apply once or twice daily | \$\$ (generic) | <ul style="list-style-type: none"> • pads and solution contain isopropyl alcohol and may cause excessive drying • rare case reports of pseudo-membranous colitis have been reported following topical clindamycin |
| Erythromycin (A/T/S®, Erygel®, Eryderm®, generics) | Gel 2% Ointment 2% Pledgets 2% Solution 1.5% 2% | Apply once or twice daily | \$\$ (generic) | <ul style="list-style-type: none"> • gel, pledgets and solution all contain isopropyl alcohol |
| Sulfacetamide (Klaron®) | Lotion 10% | Apply once or twice daily | \$\$\$\$ | <ul style="list-style-type: none"> • contraindicated in patients allergic to sulfonamides |

Algorithm Annotations

Combination Products

| Medication * | Formulation (e.g., brand name) | Directions | Cost ** | Comments |
|---------------------------------------|---|---------------------------------|----------|---|
| Benzoyl Peroxide 5% - Clindamycin 1% | Gel (Benzaclin®, Duac®) | Apply twice daily | \$\$\$\$ | <ul style="list-style-type: none"> • see comments for individual drugs • stable after dispensing for 2 months at room temperature |
| Benzoyl Peroxide 5% - Erythromycin 3% | Gel (Benazmycin®, generics) | Apply twice daily | \$\$\$\$ | <ul style="list-style-type: none"> • see comments for individual drugs • stable after reconstitution for 3 months stored under refrigeration |
| Sulfacetamide 10% - Sulfur 5% | Cream (Clenia®) Gel (Avar®, Rosula®) Lotion (Novacet R®, Sulfacet R®, generics) Wash (Clenia®, Plexion®, Rosanil®) | Apply one to three times daily. | \$\$\$ | <ul style="list-style-type: none"> • sulfur has a keratolytic action • may cause excessive dryness and irritation • contraindicated in patients with sulfonamide allergy |

* Medications are listed alphabetically.

** The cost shown is the average drug cost for a 30-day supply.

b. Topical Treatment and Oral Antibiotics for Acne

An example for moderate/severe acne may include examples listed in 5a with the addition of an oral antibiotic while continuing with the topical treatment. (See tables in this annotation for description of products.)

First Line Antibiotics

| Medication (e.g., brand name) | Dose | Cost * | Comments |
|---|---|--|---|
| Erythromycin (Erytabs®, generics) | 250 to 500 mg twice daily | \$ (250 mg twice daily) regular release tabs | <ul style="list-style-type: none"> • GI upset common • many drug interactions including (but not limited to) theophylline, digoxin, anticoagulants, lipid-lowering drugs, carbamazepine • oral erythromycin is not FDA approved for use in acne |
| Tetracycline | Initially 1g/day in divided doses, then 250 to 500 mg daily for maintenance | \$ (250 mg twice daily) | <ul style="list-style-type: none"> • do not use in children < 8 years old , pregnant or nursing women • adverse reactions all – photosensitivity (most common with doxycycline), GI upset, pseudotumor cerebri (benign intracranial hypertension) • minocycline - abnormal pigmentation, vertigo, rarely severe drug reaction/ lupus-like reaction • tetracycline must be taken on an empty stomach, 1 hour before or 2 hours after meals • drug interactions include antacids, oral contraceptives, anticoagulants |
| Doxycycline (monohydrate and hyclate salts available) | 50 to 100 mg daily | \$\$ (50 mg hyclate salt once daily) | |
| Minocycline (Minocin®, generics) | 50 to 200 mg daily (doses > 100 daily are usually given in divided doses) | \$\$\$\$ (100 mg once daily) | |

Algorithm Annotations

Second Line Antibiotics

| Medication (e.g., brand name) | Dose | Cost* | Comments |
|---|---|-----------------------------|--|
| Clindamycin (Cleocin®, generics) | 150 mg once to twice daily | \$\$\$ (150 mg twice daily) | <ul style="list-style-type: none"> • can cause severe and potentially fatal pseudomembranous colitis. Patients should be instructed to stop drug at the first sign of diarrhea and notify the physician • oral clindamycin is not FDA approved for treatment of acne |
| Sulfamethoxazole/Trimethoprim (Bactrim®, Septra®, generics) | 400/80 mg (one single-strength tab) once to twice daily | \$\$ (1 tablet twice daily) | <ul style="list-style-type: none"> • contraindicated in patients allergic to sulfonamides • common side effects include allergic skin reactions and GI disturbances • drug interactions include (but not limited to) anticoagulants, cyclosporin, sulfonylureas • not FDA approved for treatment of acne |

* The cost shown is the average drug cost for a 30-day supply. Brand names are included for reference only and are not meant to be all-inclusive.

Other antibiotics such as azithromycin are being used in acne but studies are preliminary and concrete recommendations regarding their use cannot be made at this time.

(Basler, 1980; Bershada, 2002; Bershada, 2001; Bleeker, 1981; Bleeker, 1983; Christian, 1975; Gammon, 1986; Graupe, 1996; Harcup, 1980; Hersle, 1972; Hubbell, 1982; Hughes, 1992; Leshner, 1985; Leyden, 2001; Leyden, 1997; Lookingbill, 1997; Lucky, 1998; Mancini, 2000; Panzer, 1977; Shalita, 1996; Webster, 2002)

Supporting evidence is of classes: A, C, D, R

6. Patient Education

Successful management of acne is dependent on a successful partnership between the health care team and the patient. Non-adherence is one of the biggest causes of treatment failure. Clear guidelines regarding treatment, possible adverse effects and realistic expectations of treatment outcomes should be given to the patient to achieve the best possible outcome. Ongoing patient education, follow-up, encouragement, and maintaining a positive approach are vital. Because acne can be so devastating for many, early intervention with a proactive treatment plan may well prevent some of the long-term physical and psychosocial consequences.

Myths and Facts

An integral component of the prevention and treatment of acne is discussion of the facts and expulsion of the myths (Clearihan, 2001).

MYTH: Any acne medication works immediately.

FACT: It can take at least eight weeks of a prescribed treatment regimen for the patient to see any improvement. **Acne may even get worse before it gets better.**

Algorithm Annotations

MYTH: Acne is a result of poor hygiene.

FACT: As a result of this myth, people tend to overwash their skin, often scrubbing hard with abrasive cleansers. Cleaning the skin too often may aggravate acne and cause flare-ups. Wash face twice per day with a mild soap; pat dry and use appropriate acne treatment. Acne is not caused by dirt or surface oil.

MYTH: Washing many times a day will diminish acne.

FACT: Under normal circumstances, wash no more than two times a day with mild soap and lukewarm, not very hot or very cold water.

MYTH: Washing with abrasive soaps, cleansing granules, astringents, vigorous scrubbing or a buff puff will clear up acne on the face.

FACT: Using your fingertips or a soft wash cloth is best.

MYTH: Picking your acne will make it go away.

FACT: This may cause scarring. Do not pick at acne lesions.

MYTH: Once acne has cleared up, it will be gone forever.

FACT: There is no cure for acne. If acne medication is discontinued, acne will probably flare.

MYTH: Stress causes acne.

FACT: Stress alone does not cause acne but may exacerbate psychological reaction to the acne. Acne is caused by overactive oil glands stimulated by androgens mixing with dead skin cells. This is particularly true during the teenage years when androgen production is at its highest.

MYTH: Eating chocolate and sugar will cause acne.

FACT: There is no evidence to support this. Certain foods may make some patients' acne worse, and obviously should be avoided. No specific food has been proven to worsen acne. No diet has been shown to be beneficial.

MYTH: Teenagers are the only ones affected by acne.

FACT: Acne affects adults as well as children. The body produces androgens throughout life. The circumstances around adult acne may be a little different than in teens, particularly in women. Women between 18 and 40 years may have breakouts that occur most frequently when they are premenstrual.

Supporting evidence is of class: R

Home care recommendations

- Topical medications should be applied to dry skin.
- Try to avoid abrasive soaps, cleansing granules, astringents and vigorous scrubbing.
- Under normal circumstances, wash no more than two times a day with your fingertips or a soft wash cloth.
- Patients who are treated with acne medications often develop dry skin. Use fragrance-free, non-comedogenic, oil-free moisturizers. These moisturizers will not clog pores therefore should not cause black- or whiteheads.
- For patients who choose to use makeup to cover their acne lesions, a water based, non-comedogenic makeup should be used. Avoid oil based cosmetics. Use makeup sparingly.

- Do not cover acne with bandages or tight fitting clothing.
- If a topical retinoid or photosensitizing antibiotics are prescribed, recommend staying out of the sun as much as possible and stress the use of sunscreens.

(Arndt, 2002; National Institutes of Health Department of Health and Human Services, 1999)

Supporting evidence is of class: R

7. Follow-Up 6-12 Weeks/Satisfactory Response?

There is no clear evidence to support a specific duration of any treatment for acne. However, clinical experience and clinical trials suggest that a minimum treatment period of 6-12 weeks is needed before an improvement will be noted in most patients.

8. Assess Outcome and Adherence

Asking non-threatening, open-ended questions during patient interviews can be a useful method of assessing medication adherence. The interview should include probes for factors that contribute to non-adherence including adverse reactions, misunderstandings of asymptomatic or chronic disease treatment, depression, cognitive impairment, complex dosing regimens, and financial constraints (Nichols-English, 2000).

A. Assess the patient's knowledge of his/her medication and medical condition:

"Can you explain why you are using this medication?"

"How do you use your medication (with food or on an empty stomach; in the morning or the evening)?"

B. Assess the patient's medication administration process:

"Many patients have difficulty remembering to use their medication. From what you recall, have you ever had trouble remembering to use your medications?"

"How do you remember to use your medication each day? Do you use a reminder device such as a pill box or alarm?"

C. Assess the patient's barriers to adherence:

"What is the most difficult task for you in reaching your treatment goal?"

"Are you comfortable with your ability to follow the treatment plan that we have designed for you?"

"Are you experiencing any unusual symptoms that you fear may be due to your medication?"

"Is the cost of your medications interfering with your treatment?"

Supporting evidence is of class: R

9. Modify Treatment Plan

Consider different/additional medications

It may be necessary to switch to a different class of topical acne medication. For example: if the patient is on a benzoyl peroxide product or a combination product and is not responding, consider switching to a once daily topical retinoid, and a once daily topical anti-infective. For moderate to severe acne, consider

adding an oral antibiotic or switching the current oral antibiotic (*Bershad, 2001; Drake, 1989*). Selection is based on patient specific factors.

Consider adjunctive therapy

- **Oral contraceptives**

The addition of combination oral contraceptives has been shown to be effective in the treatment of acne. [*Conclusion Grade I: See Conclusion Grading Worksheet C – Annotation #9 (Oral Contraceptives)*]

Treatment with a combined oral contraceptive (estrogen and progestin) is an alternative for women who fail conventional acne therapies. Oral contraceptives are effective for the treatment of acne due to their androgen modulating properties. It is the estrogen component of combined oral contraceptives that reduces androgen production and decreases the amount of free and active testosterone by increasing the production of sex hormone binding globulin. Progestin-only oral contraceptives are not effective and may worsen acne. Responses may not be seen for 3-6 months, with some patients showing a flare of symptoms during early cycles. Although some progestins have exhibited androgenic properties during in vitro and animal studies, all combination oral contraceptives have antiandrogenic properties due to the estrogen component. To ensure adherence with therapy, the ideal product is one that has the lowest incidence of adverse effects for a particular patient. Products with FDA indications for acne include Estrostep® and Ortho Tri-cyclen®.

(*Koulianos, 2000; Lucky, 1997; Redmond, 1997; Rosen, 2003; Thiboutot, 2001*)

- **Spirolactone**

Spirolactone is a medication primarily used in the treatment of hypertension. Due to its antiandrogenic effect, it has occasionally been used to treat adult onset acne in women when other treatments have been ineffective. It is the effects of testosterone that are felt to be a contributing factor to the development of acne in adult females. The drug acts by blocking the effects of testosterone on the oil glands and hair follicles of the female patient. The result is a reduction in oil production that may lead to improvement of their acne. The optimal dosage varies, but ranges from 50 mg to 200 mg daily. Response may take two to three months*. The drug should not be used in pregnancy. Women of child-bearing age should use birth control methods while taking the medication. Side effects are rare, usually related to menstrual irregularity, mild GI upset, or headache. The medication may be taken for one to two years with periodic rest periods (*Doggrell, 2001*).

* Spirolactone can cause decreased sodium and increased potassium. Levels should be initially measured and carefully monitored at appropriate intervals.

- **Oral Retinoids**

Isotretinoin is the only oral retinoid approved for use in acne and is a well established teratogen. Although causality has not been determined for depression and suicide this is an ongoing concern. In view of these factors its use is highly regulated by the FDA.

Only providers registered with the iPLEDGE program may prescribe Isotretinoin. For information about this program conduct an internet search using: iPLEDGE program. This program is scheduled to start March 1, 2006 and replaces the existing System to Manage Accutane Related Teratogenicity (S.M.A.R.T.) program.

- **Intra-lesional injections**

There are rare circumstances in which you may consider injecting large acne cysts with a corticosteroid for short-term cosmetic improvement. Each injection carries a risk of causing skin atrophy. Repeated injections are not recommended. The concentration of Triamcinolone varies from 2-10 mg/cc. The stock 10-, 25- or 40- mg/ml steroid suspension should be diluted with lidocaine and

Algorithm Annotations

only enough injected through a 1- ml syringe with a 27- or 30- gauge needle to distend the cyst slightly (usually 0.025 ml to 0.1 ml).

- **Light Therapy**

There continue to be numerous studies about light treatment for acne, including blue light and photodynamic therapy with and without pretreatment with topical medications. At this time, the evidence is inadequate to make a recommendation about the efficacy and safety of these treatments.

Consider dermatology referral

Dermatologists treat all forms of acne, particularly severe cases. For those patients with severe inflammatory acne that has not improved with previously described medications, a retinoid, isotretinoin (Accutane), may be considered. Dermatologists may be helpful to guide you at any point of the algorithm.

Supporting evidence is of classes: A, R

(Johnson, 2000; Mancini, 2000; Leyden, 1997; Worret, 2001)

For most current information regarding Isotretinoin:

<http://www.fda.gov/cdec/drug/infopage/accutane/default.htm>

10. Maintenance

If stable on current topicals, continue treatment indefinitely.

If stable on topical and systemic antibiotics, after clearance is achieved for 1 to 3 months consider tapering oral antibiotics and continue topicals indefinitely.

Availability of references

References cited are available to ICSI participating member groups on request from the ICSI office. Please fill out the reference request sheet included with your guideline and send it to ICSI.

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Evidence Grading System

I. CLASSES OF RESEARCH REPORTS

A. Primary Reports of New Data Collection:

- Class A: Randomized, controlled trial
- Class B: Cohort study
- Class C: Non-randomized trial with concurrent or historical controls
Case-control study
Study of sensitivity and specificity of a diagnostic test
Population-based descriptive study
- Class D: Cross-sectional study
Case series
Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

- Class M: Meta-analysis
Systematic review
Decision analysis
Cost-effectiveness analysis
- Class R: Consensus statement
Consensus report
Narrative review
- Class X: Medical opinion

II. CONCLUSION GRADES

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system defined in Section I, above, and are assigned a designator of +, -, or \emptyset to reflect the study quality. Conclusion grades are determined by the work group based on the following definitions:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results from different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Evidence Grading System

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

The symbols **+**, **-**, **∅**, and **N/A** found on the conclusion grading worksheets are used to designate the quality of the primary research reports and systematic reviews:

+ indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis;

- indicates that these issues have not been adequately addressed;

∅ indicates that the report or review is neither exceptionally strong or exceptionally weak;

N/A indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

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Conclusion Grading Worksheet A – Annotation #5 (Choose Treatment Plan)

Work Group's Conclusion: There are multiple treatment modalities that have been demonstrated effective in the treatment of acne.

Conclusion Grade: I

| Author/Year | Design Type | Class | Quality +,-,0 | Population Studied/Sample Size | Primary Outcome Measure(s)/Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions/ Work Group's Comments (italicized) |
|---|-------------|-------|------------------|---|--|--|
| Lookingbill et al., 1997 Anti-bacterial (Topical) | RCT | A | + | -334 patients tx with once daily topical: 1% clindamycin and 5% benzoyl peroxide (95 patients), 1% clindamycin (92), 5% benzoyl peroxide (89), or vehicle (58) gels -11 week follow-up -patients 13-30 years of age | -percent reductions of mean number of lesions from baseline to 11 week follow-up in each group were: inflammatory 61%, 39%, 35%, 5% and noninflammatory 36%, 30%, 9%, and -11% respectively (p<0.003 for all groups vs vehicle) -percent of patients with a global improvement score of 3 or 4 at 11 weeks: 66%, 41%, 36%, and 10% (p<0.002 for all groups vs vehicle and combination vs individual txs) | -Topical clindamycin/benzoyl peroxide combination gel is well tolerated and superior to either individual ingredient. |
| Leshner et al., 1985 Anti-bacterial (Topical) | RCT | A | 0 | -225 patients with facial acne tx twice daily with topical: 2% erythromycin ointment (112 patients) or vehicle (113) -12 week follow-up -patients 14-30 years of age | -percent reductions of mean number of inflammatory lesions from baseline to 12 week follow-up were: 46% vs 19% (p<0.001) for treatment vs vehicle -percent reduction of mean acne severity grades at 12 weeks were: 46% vs 19% (p<0.0001) for treatment vs vehicle | -2% erythromycin ointment for topical acne therapy is significantly more effective than its vehicle control in decreasing inflammatory acne lesions. |
| Hughes et al., 1992 Anti-bacterial/keratolytic (Topical) | RCT | A | 0 | -77 patients with mild to moderate acne tx twice daily with: topical 0.05% isotretinoin (25 patients), 5% benzoyl peroxide gel (26), or placebo (26) -12 week follow-up -patients 14-29 years of age | -benzoyl peroxide significantly reduced inflamed lesions and had significantly improved acne grade by 4 weeks (p<0.01) -isotretinoin significantly reduced inflamed lesion by 12 weeks (p<0.01) and had significantly improved acne grade by 8 weeks (p<0.05) -both tx significantly reduced non-inflamed lesions by 4 weeks (p<0.05) and significantly reduced both types of lesions as compared to placebo by 12 weeks | -Topical isotretinoin is inferior in efficacy to oral tretinoin and is less effective than benzoyl peroxide in papulopustular acne, but may have a place in treatment of comedonal acne. |

**Conclusion Grading Worksheet A –
Annotation #5 (Choose Treatment Plan)**

| Author/Year | Design Type | Class | Quality +,-,0 | Population Studied/Sample Size | Primary Outcome Measure(s)/Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions/ Work Group's Comments (italicized) |
|--|-------------|-------|------------------|--|---|---|
| Lucky et al., 1998 Retinoid (Topical) | RCT | A | 0 | -271 patients with mild to moderate acne -tx once daily with: commercially available topical 0.025% tretinoin cream (99 patients), topical 0.025% tretinoin cream containing polyolprepolymers-2 (99), or vehicle (73) -12 week follow-up -mean age was 20 years | -mean percent decreases were significantly better for noninflammatory lesions in both tx groups as compared to vehicle at 2-12 week follow-ups (p<0.05) -As compared to vehicle, mean percent decreases in inflammatory lesions were only significantly better at 12 weeks for commercially available tretinoin (p<0.05) -global improvement scores at 12 weeks were categorized as excellent in 25%, 29%, and 14% or fair to good in 60%, 52%, and 41% in each group respectively | -The commercially available 0.025% tretinoin cream and the 0.025% tretinoin cream containing polyolprepolymers-2 demonstrated comparable efficacy and safety. |
| Bershad et al., 2002 Retinoid (Topical) | RCT | A | 0 | -99 (3 groups of 33) patients with facial acne tx with: topical 0.01% tazarotene gel twice daily (T+V), topical 0.01% tazarotene gel once daily and vehicle gel once daily (T+V), or vehicle gel twice daily (V+V) -12 week follow-up -patients 12-39 years of age | -as compared to V+V by week 12, T+T and T+V had significantly better: mean percentage reductions in non-inflammatory (46% and 41% vs 2%, p=0.002) and inflammatory lesions (38% and 34% vs 9%, p=0.01); percentage of tx successes (64% and 61% vs 15%, p<0.001); reductions in overall disease severity (30% and 29% vs 3%, p<0.001) | -Short-contact 0.01% tazarotene gel therapy is a safe and effective new method of acne treatment. |
| Gammon et al., 1986 Anti-bacterial (Oral) | RCT | A | 0 | -200 patients with moderate to moderately severe acne were tx orally daily -group 1 (100 patients)-1 gm erythromycin (E-Mycin tablets) for 4 weeks, followed by 333 mg erythromycin for 8 weeks plus placebo for tetracycline -group 2 (100 patients)-1 gm tetracycline (Pammycin tablets) for 4 weeks, followed by 500 mg tetracycline for 8 weeks plus placebo for erythromycin -12 week follow-up -patients were 14-30 years of age | -both groups had significantly decreased counts of pustules (group 1 -30%, group 2 -40%) papules (-25%, -23%), and open comedones (-9%, -7%) at week 2 compared to baseline (p<0.0001 for all) -by week 12, both groups counts of pustules (group 1 -73%, group 2 -65%) papules (-60%, -62%), and open comedones (-26%, -31%) had continued to decrease (p<0.0001 for all compared to baseline) -77% of group 1 and 89% of group 2 stated their acne had improved or markedly improved by week 12 -12 group 1 and 8 group 2 patients experienced side effects but only 9 (7 and 2, respectively) withdrew from the study | -Oral erythromycin and oral tetracycline are equal in efficacy and tolerance in the treatment of inflammatory acne vulgaris. |

**Conclusion Grading Worksheet A –
Annotation #5 (Choose Treatment Plan)**

| Author/Year | Design Type | Class | Quality | Population Studied/Sample Size | Primary Outcome Measure(s)/Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions/ <i>Work Group's Comments (italicized)</i> |
|---|-------------|-------|---------|--|---|---|
| Hubbell et al., 1982 Anti-bacterial (Oral) | RCT | A | +,-,0 | -49 patients with moderate acne were treated orally twice daily -group 1 (25 patients)-50 mg minocycline hydrochloride capsules for 6 months -group 2 (24 patients)-250 mg tetracycline hydrochloride capsules for 6 months -6 month follow-up -patients were at least 14 years of age | -100% of group 1 and 96% of group 2 patients reached grade 1 acne in an average of 62.8 and 78 days, respectively -96% of group 1 and 88% of group 2 patients had 2 consecutive visits registering grade 1 acne -92% of group 1 and 75% of group 2 patients reached and maintained grade 1 acne for the duration of the study -9 group 1 and 8 group 2 patients experienced side effects | -Both minocycline hydrochloride and tetracycline hydrochloride are effective when given for 6 months to patients with moderate to severe acne vulgaris. |

Conclusion Grading Worksheet B – Annotation #5 (Resistance to Antibiotics)

Work Group's Conclusion: Resistance to antibiotics is rising but does not appear to decrease effectiveness of treatment.

Conclusion Grade: II

| Author / Year | Design Type | Class | Quality +,-,0 | Population Studied / Sample Size | Primary Outcome Measure(s) / Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions / <i>Work Group's Comments (italicized)</i> |
|---|-------------|-------|------------------|---|---|--|
| Ozolins et al., 2004; Ozolins et al., 2005 | RCT | A | 0 | -- 649 community participants were each given one of 5 treatment regimens as follows: <i>Regimen 1:</i> oral oxytetracycline and topical placebo cream <i>Regimen 2:</i> oral minocycline and topical placebo cream <i>Regimen 3:</i> oral placebo and topical 5% benzoyl peroxide <i>Regimen 4:</i> oral placebo and topical 5% benzoyl peroxide plus 3% erythromycin in a combined formulation <i>Regimen 5:</i> oral placebo and topical 2% erythromycin each morning and 5% benzoyl peroxide each evening -- Follow-up time was 18 weeks -- overall participant withdrawal rate was 27%. -- Assessors and investigators were blinded concerning the type of treatment received by the subjects. | -- Percentage of subjects reporting moderate or greater improvement at 18 weeks were as follows: Regimen 1: 55% Regimen 2: 54% Regimen 3: 60% Regimen 4: 66% Regimen 5: 63% -- Overall, efficacy was similar for all regimens and differences between them were not statistically significant with the exception of a comparison of regimen 4 versus regimen 2 (odds ratio 1.74, 95% CI 1.04 to 2.90 in favor of regimen 4). -- Colonization with erythromycin-resistant propionibacteria at baseline did not affect the proportion of participants rating their response rates as "moderate" or greater for regimens containing erythromycin, although colonization with tetracycline-resistant propionibacteria significantly decreased the proportion of positive responses to minocycline and oxytetracycline. -- No regimen led to an overall increase in the frequency of antibiotic-resistant propionibacteria. -- Side effects occurred in up to 28% of participants and most commonly included nausea / upset stomach and headache (in patients given oral antibiotics). Most side effects were transient. | -- The authors state that the differences in efficacy between the different regimens were small and in general not statistically significant. -- Minocycline, the most expensive regimen, did not show superiority to other regimens. -- Results suggest that at least part of the action of antibiotics is due to direct antimicrobial effects. -- The efficacy of all three topical regimens did not appear to be compromised by the existence of antibiotic-resistant propionibacteria -- Most of treatment effect is seen within the first 6 weeks of treatment. -- Study limitations included low recruitment rates, differences in treatment adherence, and lack of participant blinding. -- A major finding from the study is the fact that topical antibiotics performed at least as well as oral antibiotic preparations in terms of clinical efficacy. |

Conclusion Grading Worksheet C – Annotation #9 (Oral Contraceptives)

Work Group's Conclusion: The addition of combination oral contraceptives has been shown to be effective in the treatment of acne.

Conclusion Grade: I

| Author/Year | Design Type | Class | Quality +, -, 0 | Population Studied/Sample Size | Primary Outcome Measure(s)/Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions/ <i>Work Group's Comments (italicized)</i> |
|------------------------|-------------|-------|--------------------|--|--|---|
| Redmond et al., 1997 | RCT | A | + | -250 women 15-49 years of age with moderate acne vulgaris (164 completed study) -treatment patients received 3 weeks OC treatment (Ortho Tri-cyclen: 0.18-0.25mg norgestimate/0.035mg EE) and 1 week inactive drug -controls-4 weeks inactive drug -follow-up 6 months | - OC group significantly better than placebo group at 6 month follow-up for: inflammatory lesions (mean reduction 51.4% vs 34.6%, p=0.01), total lesions (reduction 46.4% vs 33.9%, p=0.001), investigator's global assessment (reduction 83.3% vs 62.5%, p=0.001) | -A triphasic combination of norgestimate and EE is an effective treatment for moderate acne vulgaris in women with no known contraindication to OC therapy. - <i>This study was financially supported by the company who manufactures and distributes the product studied. The first four authors own stock in this company.</i> |
| Lucky et al., 1997 | RCT | A | + | -257 women 15-49 years of age with moderate acne vulgaris (160 included in analysis) -treatment patients received 3 weeks OC treatment (Ortho Tri-cyclen: 0.18-0.25mg norgestimate/0.035mg EE) and 1 week inactive drug -controls-4 weeks inactive drug -follow-up 6 months | - OC group significantly better than placebo group at 6 month follow-up for inflammatory lesions (mean reduction 62% vs 38.6%, p=0.0001), total lesions (reduction 29.1% vs 14.1%, p=0.0001), investigator's global assessment (reduction 93.7% vs 65.4%, p<0.001) | -An OC containing 0.035mg EE combined with the triphasic regimen of norgestimate is a safe and effective treatment of moderate acne vulgaris in women with no known contraindication to OC therapy. - <i>This study was financially supported by the company who manufactures and distributes the product studied.</i> |
| Thiboutot et al., 2001 | RCT | A | + | -350 women >13 years of age with moderate acne vulgaris and normal menstrual cycles (225 completed study) -treatment patients received 3 weeks low-dose OC treatment (Alesse: 100ug levonorgestrel/20ug EE) and 1 week inactive drug -controls-4 weeks inactive drug -follow-up 6 months | - OC group significantly better than placebo group for inflammatory lesions (mean reduction 46.8% vs 32.6%, p=0.027), total lesions (reduction 39.9% vs 23.4%, p=0.004), investigator's global assessment of acne as clear/almost clear (57.9% vs 46.7%, p<0.05) at 6 month follow-up | -This double blind, placebo-controlled study demonstrates that a low-dose OC is an effective and safe treatment for moderate acne. - <i>This study was financially supported by the company who manufactures and distributes the product studied.</i> |

OC= Oral Contraceptives, EE= Ethinyl Estradiol

| Author/Year | Design Type | Class | Quality +, -, 0 | Population Studied/Sample Size | Primary Outcome Measure(s)/Results (e.g., p-value, confidence interval, relative risk, odds ratio, likelihood ratio, number needed to treat) | Authors' Conclusions/ Work Group's Comments (<i>italicized</i>) |
|--------------------|-------------|-------|--------------------|---|---|---|
| Rosen et al., 2003 | RCT | A | 0 | -34 women 18-46 years of age with acne randomly selected to receive OC containing 0.3 mg EE /0.15 mg desogestrel (n=17) or 0.3 mg EE /0.15 mg levonorgestrel (n=17) for 9 months (16 completed study) -acne scored by lesion counting by single examiner, and serum was analyzed for sex hormone-binding globulin (SHBG), dehydroepiandrosterone sulfate (DHEAS), and free and total testosterone at baseline and 3-month intervals | -treatment groups did not differ in mean age, body mass index, acne lesion counts, SHBG, DHEAS, or free and total testosterone at baseline -of 16 (47%) subjects completing 9 months of therapy, acne decreased by 52.8% (p=0.002) in EE /levonorgestrel group (n=9) and by 58.5% (p=0.02) in EE /desogestrel group (n=7) -mean SHBG increased by 46.3 nmol/L in the EE /desogestrel and 20.0 nmol/L in the EE /levonorgestrel group (p<0.05) | Oral contraceptives containing EE /desogestrel and EE /levonorgestrel were both effective in treating acne. |

OC=Oral Contraceptives, EE=Ethinyl Estradiol

This section provides resources, strategies and measurement specifications for use in closing the gap between current clinical practice and the recommendations set forth in the guideline.

The subdivisions of this section are:

- Priority Aims and Suggested Measures
- Knowledge Products and Resources
- Other Resources Available

Priority Aims and Suggested Measures

1. Improve the selection of appropriate treatment for patients with acne based on severity.

Possible measures for accomplishing this aim:

- a. Percentage of patients with mild acne treated with appropriate topical medications at first visit.
- b. Percentage of patients with severe acne treated with appropriate topical and systemic medications at first visit.

2. Increase the number of patients who report satisfaction with the treatment of their acne.

Possible measure for accomplishing this aim:

- a. Percentage of patients who report satisfaction with treatment one year after initiation of treatment.

3. Increase the number of patients with appropriate follow up for acne treatment.

Possible measure for accomplishing this aim:

- a. Percentage of patients who have documentation of follow-up in 6-12 weeks after initiation of treatment (excludes isotretinoin).

At this point in development for this guideline, there are no specifications written for possible measures listed above. ICSI will seek input from the medical groups on what measures are of most use as they implement the guideline. In a future revision of the guideline, measurement specifications may be included.

Knowledge Products

Criteria for Selecting Resources

The following resources were selected by the *Acne Management* guideline work group as additional resources for providers and/or patients. The following criteria were considered in selecting these sites.

- The site contains information specific to the topic of the guideline.
- The content is supported by evidence-based research.
- The content includes the source/author, and contact information.
- The content clearly states revision dates or the date the information was published.
- The content is clear about potential biases, noting conflict of interest and/or disclaimers as appropriate.

Resources Available to ICSI Members Only

The following materials are available to ICSI members only. Also available is a wide variety of other knowledge products including tool kits on CQI processes and Rapid Cycling that can be helpful. To obtain copies of these or other Knowledge Products, go to <http://www.icsi.org/knowledge>.

To access these materials on the website you must be logged in as an ICSI member.

Other Resources Available

| Title/Description | Audience | Author/Organization | Websites/Order Information |
|---|------------------------|-------------------------------------|--|
| Acne; Acne - practical definition of acne, products to use, treatment | Providers and patients | American Academy of Dermatology | http://www.aad.org |
| Search: Acne literature, patient education | Providers and patients | American Academy of Dermatology | http://www.aad.org |
| Brief description of symptoms, causes, treatment and prevention of acne | Patients | Arboris, Ltd. | http://www.medinfo.co.uk/conditions/acne.html |
| Managing acne, definitions, causes and treatment | Providers and patients | Health on the Net Foundation | http://www.webmd.com |
| Acne - definition and treatment; Questions and Answers About Acne | Patients | National Institutes of Health | NIAMS Website http://www.niams.nih.gov/hi/topics/acne/acne.htm |
| Information on managing acne, facts and myths | Providers and patients | Roche Pharmaceuticals | http://www.facefacts.com |
| Information on isotretinoin therapy | Providers and patients | Center for Drug Evaluation Research | http://www.ipledgeprogram.com |