Q/ What is the best treatment for impetigo?

EVIDENCE-BASED ANSWER

Although evidence is lacking to support a single best treatment for impetigo, topical mupirocin, fusidic acid, gentamicin, and retapamulin are all at least 20% more likely than placebo to produce cure or improvement (strength of recommendation [SOR]: A, meta-analysis of randomized controlled trials [RCTs] and a single RCT of retapamulin). Topical bacitracin and fusidic acid are 15% more likely than disinfectant solutions to cure or improve impetigo (SOR: A, systematic review of RCTs).

Oral antibiotics may be as effective as topical antibiotics (SOR: B, RCTs with different results).

Evidence summary

Most data on the effectiveness of topical antibiotics focus on bacitracin, fusidic acid (not available in the United States), and mupirocin. Retapamulin 1% ointment, a topical antibiotic in the pleuromutilin class, is approved by the US Food and Drug Administration (FDA) for use in adults and children older than 9 months to treat impetigo caused by methicillin-susceptible Staphylococcus aureus and Streptococcus pyogenes.1

Topical antibiotics outperform placebo

A 2003 meta-analysis of 16 studies (1944 patients) evaluated treatments for impetigo in both adults and children.2 Investigators conducted most of the studies in outpatient settings in the United States, United Kingdom, Northern Europe, and Canada. They expressed outcomes in terms of cure or clinical improvement within 7 to 14 days of starting treatment.

Topical agents, including mupirocin, fusidic acid, and gentamicin, resulted in cure or improvement in more patients at 7 to 14 days than placebo (absolute benefit increase=20%; number needed to treat [NNT]=5; 95% confidence interval [CI], 1.49-4.86). Definitions of cure or improvement varied among the included studies, however.

A 2012 Cochrane review of various interventions included 68 RCTs with a total of 5708 participants, primarily from pediatric or dermatology hospital outpatient clinics in North America and Europe.3 Clinical cure (defined as clearance of crusts, blisters, and redness as determined by investigators) or improvement at one week were the primary outcomes (TABLE).3,4 Mupirocin (relative risk [RR]=2.21; 95% CI, 1.16-3.13), fusidic acid (RR=4.42; 95% CI, 2.39-8.17), and retapamulin (RR=1.64; 95% CI, 1.30-2.07) all demonstrated higher rates of cure or improvement than placebo.

Retapamulin produces greater clinical response than placebo in an RCT

A 2008 randomized, double-blind, multicenter, industry-funded, placebo-controlled trial of 213 patients evaluated the effectiveness of retapamulin to treat uncomplicated impetigo with an outcome of clinical response at 7 days.4 Clinical response was defined as total absence of lesions, drying of treated lesions without crusts or erythema, decrease in the size of the affected area or decrease in the number of lesions. Retapamulin ointment produced a higher rate of clinical response than placebo (absolute risk reduction=33.5%; 95% CI, 20.5-46.5; NNT=3, P<.001).

Jae Shim, MD; Jeffrey Lanier, MD
Martin Army Community Hospital, Fort Benning, Ga

Maylene (Kefeng) Qui, MLIS
Biomedical Library, University of Pennsylvania, Philadelphia

ASSISTANT EDITOR
Paul Crawford, MD
Nellis Family Medicine Residency, Nellis Air Force Base, Nev

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### TABLE

**How well do impetigo treatments work?**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Number of patients</th>
<th>ARR for cure or improvement</th>
<th>NNT</th>
<th>Cost of treatment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical antibiotics vs placebo</td>
<td>575</td>
<td>41.2%</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Retapamulin vs placebo</td>
<td>213</td>
<td>33.5%</td>
<td>3</td>
<td>Retapamulin 1% ointment (15 g): $130.12</td>
</tr>
<tr>
<td>Topical antibiotics vs disinfectant solution</td>
<td>292</td>
<td>11.4%</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Mupirocin vs fusidic acid</td>
<td>440</td>
<td>NS</td>
<td>NS</td>
<td>Mupirocin ointment 2% (22 g): $42.75 Fusidic acid is not available in the United States</td>
</tr>
<tr>
<td>Mupirocin vs oral erythromycin</td>
<td>581</td>
<td>5.1%</td>
<td>20</td>
<td>Erythromycin 100 tabs: $295.01 (250 mg), $314.23 (333 mg), $338.93 (500 mg) Erythromycin ethylsuccinate solution (100 mL): $170.50 (200 mg/5 mL), $218.14 (400 mg/5 mL)</td>
</tr>
<tr>
<td>Mupirocin vs dicloxacillin</td>
<td>53</td>
<td>NS</td>
<td>NS</td>
<td>Dicloxacillin 100 tabs (250 mg): $66</td>
</tr>
<tr>
<td>Mupirocin vs ampicillin</td>
<td>13</td>
<td>NS</td>
<td>NS</td>
<td>Ampicillin 100 tabs (500 mg): $39.88 Ampicillin suspension 100 mL: $9.54 (125 mg/5 mL), $14.08 (250 mg/5 mL)</td>
</tr>
<tr>
<td>Bacitracin vs oral erythromycin</td>
<td>30</td>
<td>NS</td>
<td>NS</td>
<td>Bacitracin ointment 500 units/g (28.4 g): $3.47</td>
</tr>
<tr>
<td>Bacitracin vs penicillin</td>
<td>34</td>
<td>NS</td>
<td>NS</td>
<td>Penicillin V oral 100 tabs (500 mg): $77.77 Penicillin V suspension 100 mL: $3.84 (125 mg/5 mL), $4.31 (250 mg/5 mL)</td>
</tr>
<tr>
<td>Cephalexin vs bacitracin</td>
<td>19</td>
<td>56.7%</td>
<td>2</td>
<td>Cephalexin 100 tabs (500 mg): $526.13 Cephalexin oral suspension 100 mL: $8.93 (125 mg/5 mL), $18.90 (250 mg/5 mL)</td>
</tr>
<tr>
<td>Erythromycin vs penicillin</td>
<td>79</td>
<td>22.4%</td>
<td>4</td>
<td>See above</td>
</tr>
<tr>
<td>Cloxacillin vs penicillin</td>
<td>166</td>
<td>35.9%</td>
<td>3</td>
<td>Cloxacillin is not available in the United States</td>
</tr>
</tbody>
</table>

ARR, absolute risk reduction; NNT, number needed to treat; NS, not significant.

Topical antibiotics work slightly better than disinfectant solutions
In a pooled analysis from the 2012 Cochrane review, topical bacitracin and fusidic acid demonstrated slightly higher rates of cure or improvement than disinfectant solutions (RR=1.15; 95% CI, 1.01-1.32).3

Oral antibiotics may work as well as, or better than, topicals
The 2012 Cochrane review found better rates of cure or improvement for topical mupirocin than oral erythromycin (RR=1.07; 95% CI, 1.01-1.13).3 Investigators noted no significant differences between topical mupirocin and bacitracin and oral antibiotics other than erythromycin, although in one small study (10 patients), oral cephalexin resulted in a higher rate of cure or improvement than topical bacitracin (absolute risk reduction [ARR]=56.7%; NNT=2).

Recommendations
The Infectious Diseases Society of America recommends topical mupirocin as first-line therapy for impetigo, although resistance to the drug exists. Patients with numerous lesions or who fail to respond to topical treatment should be treated with oral antibiotics active against S pyogenes and S aureus. Recommended oral antibiotics include dicloxacillin, amoxicillin/clavulanate, cephalexin, erythromycin, and clindamycin.5

References