

Research Letter

From the Cochrane Library: Interventions for Impetigo

Ani Oganesyan¹, BA; Torunn Sivesind¹, MD; Robert Dellavalle^{1,2}, MD, PhD

¹Department of Dermatology, University of Colorado Anschutz Medical Campus, Aurora, CO, United States

²Dermatology Service, Rocky Mountain Regional VA Medical Center, Aurora, CO, United States

Corresponding Author:

Ani Oganesyan, BA

Department of Dermatology

University of Colorado Anschutz Medical Campus

13001 E 17th Place

Aurora, CO, 80045

United States

Phone: 1 818 441 6860

Email: ani.oganesyan@cuanschutz.edu

(*JMIR Dermatol* 2021;4(2):e33433) doi: [10.2196/33433](https://doi.org/10.2196/33433)

KEYWORDS

impetigo; pustular lesions; *Staphylococcus aureus*; *Streptococcus pyogenes*; dermatology; skin infection

Impetigo is a contagious, superficial skin infection, most commonly affecting children, caused by *Staphylococcus aureus*, group A beta-hemolytic streptococcus (*Streptococcus pyogenes*), or both pathogens in combination [1]. Bacteria infect the epidermis, leading to itchy or painful, yellow-crusts, erythematous plaques. If blisters are present, the infection is referred to as bullous impetigo [2]. While untreated impetigo is often self-limited, treatment is important for symptom control, limiting the spread of infection and minimizing the risk of developing life-threatening complications. Due to the prevalence and risks associated with impetigo, evidence-based research to inform treatment guidelines is critical to decreasing its disease burden [1].

Current treatment options for impetigo, summarized in Table 1, include topical and systemic antibiotics, as well as topical disinfectants [2]. A 2012 Cochrane review, “Interventions for Impetigo” [2], assessed 68 randomized controlled trials (26 oral treatments and 24 topical treatments for the management of primary impetigo). Specifically, various management strategies were evaluated: watchful waiting, topical disinfectants (saline, hexachlorophene, povidone-iodine, chlorhexidine), topical antibiotics (neomycin, bacitracin, polymyxin B, gentamycin, fusidic acid, mupirocin, retapamulin, topical steroid/antibiotic combination), and systemic antibiotics (penicillin, [flu]cloxacillin, amoxicillin/clavulanic acid, erythromycin, cephalexin). Primary outcome measures included an assessment of clearance of crusts, blisters, and redness, as well as resolution of associated symptoms.

Table 1. Current guidelines for the management of impetigo.

Treatment	Dosing and usage	Evidence grade ^a
Topical antibiotics		
Mupirocin 2% ointment	3 times daily for 5-7 days	Strong recommendation
Retapamulin 1% ointment	2 times daily for 5 days	Strong recommendation
Fusidic acid 2% cream	3 times daily until healed or up to 14 days	Not available in the United States
Oral antibiotics		
Dicloxacillin, 250 mg; cephalexin, 250 mg	4 times daily for 7 days for empiric therapy in adults	Strong recommendation
Cephalexin, 250 mg	4 times daily for 7 days for empiric therapy in adults	Strong recommendation
Cephalexin, 25-50 mg/kg/day	3-4 divided doses for empiric therapy in children	Strong recommendation
Penicillin	If culture yields streptococci alone	Strong recommendation
Doxycycline, clindamycin, or trimethoprim-sulfamethoxazole	If methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) is suspected or confirmed	Strong recommendation

^aRecommendation according to the Infectious Diseases Society of America, using the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) system's strength of recommendation: *strong recommendation* (desirable effects clearly outweigh undesirable effects or vice versa) and *weak recommendation* (desirable effects closely balanced with undesirable effects, or [with low- or very low-quality evidence] uncertainty in the estimates of desirable effects, harms, and burden so they may be closely balanced).

Topical antibiotics (mupirocin, retapamulin, fusidic acid) were found to be more effective than the placebo and preferable to oral antibiotics for limited impetigo. Topical antibiotics were also superior to disinfection methods. No significant differences were found in studies evaluating oral antibiotics, with the exception that penicillin was less effective than most other antibiotics. Due to insufficient evidence, the efficacy of these treatments for patients with more extensive disease could not be established. However, newer data suggest systemic antibiotics are more efficacious for patients with 5 or more lesions, or with oral or deep tissue involvement [3]. Significant findings pertaining to the treatment comparisons in this review are summarized in Table 2.

Of note, the authors of the Cochrane review pointed to a lack of evidence regarding impetigo treatment in developing countries and endemic populations—a significant data gap given that impetigo disproportionately affects children in resource-poor communities and has the highest prevalence among Australian Aboriginal children (up to 49%). A recent systematic review [4] provided much-needed insight, calling for research into topical antimicrobials for impetigo as alternatives to current first-line therapy (oral co-trimoxazole and intramuscular benzathine penicillin G) in rural Australia. Currently, there are no trials of topical antibiotics for impetigo in high-burden settings, highlighting the need for further studies.

Table 2. Treatment comparison with respective results, risk ratio (RR), 95% CI, and number of studies and participants.

Comparison	Measurement	Result	Statistics
Topical antibiotic vs placebo	Investigator assessment	Topical antibiotic was superior	RR 2.24, 95% CI 1.61-3.13; 6 studies, n=575
Topical mupirocin vs topical fusidic acid	Investigator assessment	No difference	RR 1.03, 95% CI 0.95-1.11; 4 studies, n=440
Topical mupirocin vs oral erythromycin	Investigator assessment	Topical mupirocin was superior	RR 1.07, 95% CI 1.01-1.13; 10 studies, n=581
Penicillin vs erythromycin	Investigator assessment	Erythromycin was superior	RR 1.29, 95% CI 1.07-1.56; 2 studies, n=79
Penicillin vs cloxacillin	Investigator assessment	Cloxacillin was superior	RR 1.59, 95% CI 1.21-2.08; 2 studies, n=166
Topical antibiotics vs disinfecting treatments	Investigator assessment	Topical antibiotic was superior	RR 1.15, 95% CI 1.01-1.32; 2 studies, n=292

In industrialized settings, data continue to support the use of topical mupirocin and retapamulin as first-line treatments for primary impetigo. Current guidelines (Table 1) recommend topical antibiotics as the initial therapy for most patients. In patients with numerous lesions, ulceration into the dermis, or

in outbreaks affecting several people, oral antibiotics are preferred [5].

The commonality of impetigo and its rapidly changing antibiotic resistance patterns make it a moving target. Its contagious nature and associated morbidity further emphasize the need for updated guidelines.

Editorial Notice

The views expressed in this paper are those of the authors and in no way represent the Cochrane Library or Wiley.

This article is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2012, Issue 1, DOI:10.1002/14651858.CD003261.pub3 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

Conflicts of Interest

RD is editor in chief of *JMIR Dermatology*, a joint coordinating editor for *Cochrane Skin*, a dermatology section editor for *UpToDate*, a social media editor for the *Journal of the American Academy of Dermatology* (JAAD), and a podcast editor for the *Journal of Investigative Dermatology* (JID). He is a coordinating editor representative on Cochrane Council and Cochrane Council cochair. TS is a section editor for *JMIR Dermatology*.

RD receives editorial stipends (JAAD, JID), royalties (*UpToDate*), and expense reimbursement from *Cochrane Skin*. TS receives fellowship funding from the Pfizer Global Medical Grant (58858477) Dermatology Fellowship 2020 (principal investigator: author RD) and serves on the Medical Advisory Board of Antedotum Inc.

References

1. Hartman-Adams H, Banvard C, Juckett G. Impetigo: diagnosis and treatment. *Am Fam Physician* 2014 Aug 15;90(4):229-235 [[FREE Full text](#)] [Medline: [25250996](#)]
2. Koning S, van der Sande R, Verhagen AP, van Suijlekom-Smit LWA, Morris AD, Butler CC, et al. Interventions for impetigo. *Cochrane Database Syst Rev* 2012 Jan 18;1:CD003261 [[FREE Full text](#)] [doi: [10.1002/14651858.CD003261.pub3](https://doi.org/10.1002/14651858.CD003261.pub3)] [Medline: [22258953](#)]
3. Nardi NM, Schaefer TJ. Impetigo. Treasure Island, FL: StatPearls Publishing; 2021.
4. May PJ, Tong SYC, Steer AC, Currie BJ, Andrews RM, Carapetis JR, et al. Treatment, prevention and public health management of impetigo, scabies, crusted scabies and fungal skin infections in endemic populations: a systematic review. *Trop Med Int Health* 2019 Mar;24(3):280-293 [[FREE Full text](#)] [doi: [10.1111/tmi.13198](https://doi.org/10.1111/tmi.13198)] [Medline: [30582783](#)]
5. Impetigo (updated Nov 30, 2018). DynaMed. Ipswich, MA: EBSCO Information Services; 1995. URL: <https://www.dynamed.com/condition/impetigo> [accessed 2021-10-30]

Edited by G Eysenbach; submitted 07.09.21; peer-reviewed by J Solomon, F Wallnöfer; comments to author 21.10.21; revised version received 31.10.21; accepted 22.11.21; published 03.12.21

Please cite as:

Oganesyan A, Sivesind T, Dellavalle R

From the Cochrane Library: *Interventions for Impetigo*

JMIR Dermatol 2021;4(2):e33433

URL: <https://derma.jmir.org/2021/2/e33433>

doi: [10.2196/33433](https://doi.org/10.2196/33433)

PMID: [27633120](https://pubmed.ncbi.nlm.nih.gov/27633120/)

©Ani Oganesyan, Torunn Sivesind, Robert Dellavalle. Originally published in *JMIR Dermatology* (<http://derma.jmir.org>), 03.12.2021. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in *JMIR Dermatology Research*, is properly cited. The complete bibliographic information, a link to the original publication on <http://derma.jmir.org>, as well as this copyright and license information must be included.