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ONLINE EXCLUSIVE

Minor derm ailments: How good is the evidence for common treatments?

Not very. This systematic review reveals that only a few therapies have high-level research to support them

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Practice recommendations

- Oral flucloxacillin is less effective than local antibiotics for impetigo in limited disease (level of evidence [LOE] **1a**).
- Topical metronidazole and azelaic acid are effective for rosacea (LOE **1a**).
- Betadine is effective for minor infections following partial thickness burns (LOE **1b**).
- Terbinafine is effective against fungal infections of the nail (LOE **1a**).
- Miconazole is effective against oral thrush (LOE **1a**).

Level of evidence (LOE)

1a: Systematicreviews (with homogeneity) of randomized controlled trials (RCTs).
1a-: Systematic review of randomized trials displaying worrisome heterogeneity.
1b: Individual RCT (with a narrow confidence interval).
1b-: Individual RCT (with a wide confidence interval).
1c: All or none RCTs.
2a: Systematic reviews (with homogeneity) of cohort studies.
2a-: Systematic reviews of cohort studies displaying worrisome heterogeneity.
2b: Individual cohort study or low-quality RCTs (<80% follow-up).
2b-: Individual cohort study or low-quality RCTs (<80% follow-up/wide confidence interval).
2c: "Outcomes" research; ecological studies.
3a: Systematic review (with homogeneity) of case-control studies.
3a-: Systematic review of case-control studies with worrisome heterogeneity.
3b: Individual case-control study.
4: Case series (and poor-quality cohort and case-control studies).
5: Expert opinion without explicit critical appraisal, or based on physiology, bench research, or "first principles."

Source: Essential Evidence Plus. Levels of evidence.[1]

Do you use silver sulfadiazine for partial-thickness burns? If you do, you may be surprised to learn that the evidence for its use in this situation is conflicting. This was just one of the findings of our systematic review of the methodologic quality and statistical and clinical relevance of current therapies for minor dermatologic ailments.

Given that minor ailments, frequently dermatologic, account for 40% to 70% of all consultations in family medicine,[2,3] guidelines based on better research are needed. This need is underscored by the increasing delegation of minor treatments to staff nurses, nurse practitioners, and physician assistants, who should undergo comprehensive training, preferably based on valid guidelines.[4,5] Moreover, consultations for prevalent minor ailments often lead to prescriptions for medications, thereby generating considerable costs.[6,7]

Methods

The starting point for this review was the textbook, *Minor Ailments in Primary Care: An Evidence-Based Approach*,[6] which describes 119 minor ailments, selected mainly on the basis of disease prevalence. We selected all dermatologic ailments (International Classification of

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Primary Care-code 'S') (N=42) (**TABLE**).[5]

We searched the online databases PubMed, Cochrane Controlled Trials Register, and Clinical Evidence for articles relating to the treatment of these conditions. For each ailment, we used various search terms for indication and treatment.[8] (See note at end of Methods section.) We excluded alternative (nonallopathic) and most preventive therapies because they are unusual in the daily practice of family medicine.

We searched only for trials in which treatments were compared with placebo or a reasonable, accepted usual therapy. The search followed a hierarchy of evidence:[8] systematic reviews (SRs), then randomized controlled trials (RCTs), then other research articles (nonrandomized clinical trials, case series). When we found a relevant SR published in 2004 or later, we did not search for a lower level of evidence (LOE). Instead, we restricted our subsequent search to RCTs published after the publication date of the SR.[8] Two of the authors (SPG and JAHE) selected articles independently, based on article title and abstract. Disagreements in selection were discussed and consensus was reached. If an article contained relevant first-line therapy, we also used the "related articles" option in PubMed to check for more sources. (See note at end of Methods section.)

To evaluate the methodologic quality of SRs and trials, we ranked articles according to the method of infoPOEMs.[8] (See key on page E1.) Two experienced researchers (JAHE and AKN) scored all articles independently. Consensus was reached in cases of disagreement.[9] We deemed evidence convincing if the study showed the intervention was effective and if the LOE of the study was high (levels 1a, 1b, or 2a).

Evaluating breadth of treatment application. To explore whether a treatment for a certain minor ailment could be applied to other ailments with similar symptoms and thus increase the strength of the treatment's rationale, we clustered ailments, where possible, into *bacterial infection, fungal infection, itch,* and *pain.*

We classified the efficacy of therapies as *yes, likely* (if the result was not convincingly effective or based on small studies, or if the study objective was unclear), or *no*. Treatments with no trials to support them are so identified. As to whether the evidence was convincing, we indicated *yes*, *no*, or *conflicting*.

Post hoc analysis. For trials with a wide confidence interval and for therapies described as not clearly effective, we performed a post hoc power analysis to explore if the trial was underpowered.[10] We compared the number of subjects in the study (n_1) with the number we calculated as necessary for the study to have sufficient power (n_2). For all studies, we used standardized values (α=0.05 and β=0.20). If $n_1 \geq n_2$ we considered the study design accurate, and if $n_1 < n_2$ we concluded that the power was insufficient for the study to be able to answer its objectives.

Further details on the following information are available from the corresponding author:

- terms used in searching online databases
- post hoc power analysis
- a summary of treatment rationales, therapies and their effectiveness, country where the research was undertaken, number of authors, and year of article publication for each dermatologic ailment.

Results

We collected 71 articles published in the medical literature between January 1981 and July 2007.[11-81] On average, we found 2 articles per minor dermatologic ailment, with a range of 0 to 7. For 7 common ailments, we found no studies on therapies; for 13 ailments we found just 1 trial each.

For 20 of the 42 ailments, we found

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For limited impetigo, local antibiotic treatment is more effective than oral flucloxacillin.

a SR of treatments (10 Cochrane reviews, 5 Clinical Evidence, and 5 from other sources). Most articles describing RCTs presented results with wide confidence intervals (LOEs 1b- and 2b-), mainly due to small sample sizes. Eleven RCTs (14%) had high dropout rates (LOE 2b or 2b-).

Seventy-four percent of all the trials were conducted in Europe and North America. The United States (24%) and United Kingdom (25%) were the largest contributors. Studies of Asian and South American populations (eg, Indian, Nepalese, Iraqi, Brazilian) tended to focus on problems more prevalent in these countries, such as lice and scabies.

For 26 of the 42 ailments, evidence was unclear (no studies or studies with inconclusive evidence). Very few of the therapies commonly used for minor dermatologic ailments are supported by high-level research evidence. Even some SRs included only methodologically poor RCTs, which indicates that more research is needed.

A look at outcomes. The **TABLE** summarizes the effectiveness of therapies usually applied to minor dermatologic ailments in daily practice. The columns present, in turn:

- the minor ailment,
- the treatments usually applied in daily practice,
- the number of studies found for these treatments,
- the condition at which treatment was aimed,
- whether the targeted condition belongs to 1 of the 4 categories of main symptoms,
- whether the study/studies reported a positive effect for the treatment,
- whether the evidence for the effectiveness of a particular treatment was (according to the authors) convincing,
- whether the overall rating of evidence was convincing,
- and whether further studies are needed.

Results varied. With partial thickness burns, evidence was conflicting on the effectiveness and the harms of silver sulfadiazine and several types of gauzes. For boils, we could find no trial about therapy. For both warts and mollusca contagiosa, Cochrane reviews were inconclusive on therapies commonly used in general practice. Evidence was also inconclusive for treatments for paronychia, polymorphic light eruption, and dog and cat bites.

Clustering by treatment rationale

Bacterial infections. We found trials on antibiotic therapy for 5 of the 12 minor dermatologic ailments caused by or followed by bacterial infection. For the other 7, no trials were available. We found evidence for the effectiveness of treatment in 3 of the 11 indications (impetigo, erythrasma, and rosacea). For the treatment of impetigo (in cases of limited disease), oral flucloxacillin is less effective than local antibiotic treatment (**LOE 1a**). Betadine for minor infections after partial thickness burns is effective (**LOE 1b**)or all other dermatological minor ailments in the bacterial infections category, the effectiveness of antibiotic therapy was unclear.

Fungal infections. For 8 of the 9 ailments in which a fungal infection (yeast, fungals, dermatophytes) was one of the main reasons for therapy, we found trials on antimycotic treatment. There were 2 SRs of oral therapy for fungal nail infections, both concluding that terbinafine is an effective antifungal therapy for the condition. Miconazole is effective for infections with *Candida albicans* or dermatophytes (**LOE 1a**).

Itch. Itch was a main reason for treating 8 ailments. We found some trials for neutral lotion or oral antihistamines. We also found evidence supporting use of local antihistamines for 2 of the 8 minor ailments. For 4 ailments, we found studies with positive results for local application

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Two systematic reviews concluded that oral terbinafine is effective for fungal nail infections.

of steroids; we found no studies for oral steroids. We can therefore conclude that local steroids are effective for ailments in which itch is one of the main symptoms.

Pain. For 5 ailments, relief from pain was the main target of treatment. Trials, however, did not focus on generic pain medications but on treatments aimed at specific causal pathways of the ailment (eg, antiviral treatment for the postherpetic pain of shingles). Therefore, we cannot draw generalizable conclusions on the treatment of pain in minor dermatologic ailments.

Post hoc power analysis

Most of the 10 trials with LOE 1b- (and effectiveness of treatment described as *no* or *likely*) needed many more patients to reach a higher LOE. In only 2 trials,[55,66] the number of patients was sufficient. Four of the 10 trials were missing information that would have enabled us to judge whether they were underpowered. In 4 other trials, we considered the number of patients needed to prove treatment effectiveness (n_2) unrealistic, and, consequently, the therapy as very likely ineffective.

Conclusions

Study design was poor for more than half of the trials identified. And other studies were so small as to lack statistical power. We found convincing evidence (SRs or good RCTs) for the effectiveness of usual therapy for fewer than half of the ailments selected. Had we extended our search to more databases, such as EMBASE and CINAHL, we may have identified more trials. However, it is unlikely we would have arrived at a different conclusion, given that the number of relevant studies was so low in the databases we did search (PubMed, Cochrane library, Clinical Evidence).

We clustered ailments to determine if a treatment aimed at a particular symptom or complication could be applied to all ailments exhibiting that condition. On the basis of the treatment effect found for 4 ailments, we determined that local steroids would most likely effectively relieve itch associated with all minor dermatologic ailments. For other conditions, grouping by rationale for treatment did not yield any extendable applications.

Generally accepted treatments for minor dermatologic ailments are insufficiently supported by research evidence. This limitation contrasts dramatically with the body of evidence supporting therapies in other aspects of family practice, reportedly having sufficient LOEs in the range of 50% to 80% of treatments.[82,83] Given that minor ailments are a substantial portion of a family physician's workload, and that other primary care providers are increasingly treating these ailments, definitive guidelines based on high-quality research are needed. This aspect of medical care deserves more attention from researchers and funding agencies. ■

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Duct tape occlusion for treating warts is ineffective.

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Disclosure

The authors reported no potential conflict of interest relevant to this article.

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Fewer than half of the ailments had convincing evidence to support the effectiveness of usual therapy.

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TABLE

The treatment of minor dermatologic ailments: What the research tells us

Treatments for which sufficient positive evidence exists are highlighted in green; those for which negative evidence exists are highlighted in red.

	Dermatological minor ailment (N*)	Treatment	Target for treatment	Category of treatment target, according to main symptoms	Was treatment effective?	Was the research convincing?†	Overall rating of research evidence	Are further studies required?
1.	Partial thickness burns (4)	Oral antibiotics (flucloxacillin)[11]	Infection (bacterial)	Bacterial infection	No trials	No	Moderate	Yes
		Gauze dressings[11]	Skin lesion		Likely	Conflicting		
		Silver sulfadiazine[11]	Skin lesion		No	Conflicting		
		Betadine[12]	Infection (bacterial)	Bacterial infection	Yes	Yes		
		Cooling[13]	Pain	Pain	No	No		
		Honey[14]	Pain	Pain	No	No		
2.	Polymorphic light eruption (4)	Neutral lotion	Itch	Itch	No trials	No	Poor	Yes
		Corticosteroids[15,18]	Itch	Itch	Yes	Yes		
		Oral antihistamines	Itch	Itch	No trials	No		
		Sunscreens[16,17]	Preventive		Yes	No		
3.	Acute urticaria (2)	Local ointments	Itch/rash	Itch	No trials	No	Moderate	Yes
		Oral antihistamines[19]	Itch/rash	Itch	Yes	Yes		
		Corticosteroids[20]	Itch/rash	Itch	Yes	Yes		
4.	Insect bites and stings (0)	Doxycycline	Infection (bacterial)	Bacterial infection	No trials	No	None	Yes
		Amoxicillin	Infection (bacterial)	Bacterial infection	No trials	No		
		Oral antihistamines	Pain/itch	Itch	No trials	No		
5.	Pediculosis (3)	**Malathion**[21]	Infection		Yes	Yes	Good	No
		Permethrin[22]	Infection		Yes	Yes		
		Lindane	Infection		No trials	No		
		Combing[23]	Infection		Yes	Yes		
6.	Scabies (3)	**Permethrin**[25,26]	Infection		Yes	Yes	Good	No
		Lindane[24]	Infection		Yes	Yes		
		Benzyl benzoate	Infection		No trials	No		
		Malathion	Infection		No trials	No		
7.	Dog and cat bites (1)	**Oral antibiotics** (amoxicillin)[27]	Infection (bacterial)	Bacterial infection	Yes, for bites to the hands. No, for other bites	No	Moderate	Yes
8.	Abrasions (1)	Paraffin gauze	Skin lesion		No trials	No	Poor	Yes
		Non-adherent absorbent compress	Skin lesion		No trials	No		
		Betadine	Skin lesion/ infection (bacterial)	Bacterial infection	No trials	No		
		Honey[2]	Skin lesion		Likely	No		
9.	Warts (4)	**Salicylic acid**[29]	Lump on the skin		Yes	Yes	Moderate	Yes
		Cryotherapy[29]	Lump on the skin		No	No		
		Duct tape occlusion[30-32]	Lump on the skin		No	Yes, treatment was not effective		
		Surgical procedures	Lump on the skin		No trials	No		
10.	Molluscum contagiosum (1)	Curettage[33]	Lump on the skin		No trials	No	Poor	Yes
		Liquid nitrogen[33]	Lump on the skin		No trials	No		
		Fusidic acid cream[33]	Lump on the skin		No trials	No		
		Betadine[33]	Lump on the skin		No	No		

TABLE (cont.)

The treatment of minor dermatologic ailments: What the research tells us

Treatments for which sufficient positive evidence exists are highlighted in green; those for which negative evidence exists are highlighted in red.

	Dermatological minor ailment (N*)	Treatment	Target for treatment	Category of treatment target, according to main symptoms	Was treatment effective?	Was the research convincing?†	Overall rating of research evidence	Are further studies required?
11.	Furuncles (0)	Hot compress	Pain	Bacterial infection	No trials	No	None	Yes
		Antibiotics	Infection (bacterial)	Bacterial infection	No trials	No		
12.	Impetigo (1)	**Local fusidic acid or mupirocin**[34]	Infection (bacterial)	Bacterial infection	Yes	Yes	Good	No
		Oral antibiotics[34]	Infection (bacterial)	Bacterial infection	Yes	Yes, but less effective than local treatment in limited disease		
13.	Pityriasis versicolor (2)	Selenium sulphide	Infection	Fungal infection	No trials	No	Moderate	Yes
		Imidazole	Infection	Fungal infection	No trials	No		
		Fluconazole[35]	Infection	Fungal infection	Yes	No		
		Itraconazole[36]	Infection	Fungal infection	Yes	No		
14.	Intertrigo (2)	**Miconazole**[37,38]	Infection	Fungal infection	Yes	Yes	Moderate	Yes
		Hydrocortisone[37]	Infection	Fungal infection	No	No		
15.	Erythrasma (1)	Imidazole	Infection (bacterial)	Bacterial infection	No trials	No	Good	No
		Benzoic acid	Infection (bacterial)	Bacterial infection	No trials	No		
		Erythromycin[39]	Infection (bacterial)	Bacterial infection	Yes	Yes		
16.	Shingles (6)	**Acyclovir**[40]	Infection (viral)		Yes	Yes	Moderate/Good	Yes
		Famcyclovir[41]	Infection (viral)		Yes	No		
		Acyclovir + prednisolone[42]	Infection (viral)		Yes	No		
		Corticosteroids[43,44]	Inflammation		No	Yes, treatment was not effective		
		Amitriptyline[45]	Pain		Likely	No		
17.	Pruritus in the elderly (1)	Local emollients	Itch	Itch	No trials	No	Moderate	Yes
		Corticosteroids	Itch	Itch	No trials	No		
		Local antihistamines	Itch	Itch	No trials	No		
		Oral antihistamines[46]	Itch	Itch	Yes	Yes		
18.	Xeroderma (0)	Emollients	Dry skin		No trials	No	None	Yes
19.	Androgenic alopecia (5)	Wig	Hair loss		No trials	No	Moderate	Yes
		Finasteride[49-51]	Hair loss		Yes	Yes		
		Minoxidil[47,48]	Hair loss		Likely	Conflicting		
20.	Alopecia areata (5)	Minoxidil[52,53]	Hair loss		No	No	Moderate	Yes
		Oral prednisolone[54]	Hair loss		Likely	No		
		Desoxymethasone[55]	Hair loss		No	No		
		Betamethasone[56]	Hair loss		Likely	No		
21.	Dandruff (4)	Zinc pyrithione[57]	Infection (yeast)	Fungal infection	Yes	No	Moderate	Yes
		Ciclopirox[58-60]	Infection (yeast)	Fungal infection	Yes	Yes		
		Ketoconazole[61]	Infection (yeast)	Fungal infection	Yes	Yes		
		Selenium sulphide[61]	Infection (yeast)	Fungal infection	Yes	Yes		
		Corticosteroids[61]	Itch	Itch	Yes	Yes		
22.	Seborrhoeic eczema (2)	Zinc pyrithione[57]	Infection (yeast)	Fungal infection	Yes	No	Moderate	Yes
		Ketoconazole[61]	Infection (yeast)	Fungal infection	Yes	Yes		
		Coal tar[61]	Infection (yeast)	Fungal infection	Yes	Yes		
		Selenium sulphide[61]	Infection (yeast)	Fungal infection	Yes	No		
		Corticosteroids[61]	Itch	Itch	Yes	Yes		

CONTINUED

TABLE (cont.)

The treatment of minor dermatologic ailments: What the research tells us

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	Dermatological minor ailment (N*)	Treatment	Target for treatment	Category of treatment target, according to main symptoms	Was treatment effective?	Was the research convincing?†	Overall rating of research evidence	Are further studies required?
23.	Herpes labialis (1)	**Sunscreens**[62]	Prevention		Yes	Yes	Good	No
		Oral antivirals[62]	Infection (viral)		Yes	Yes		
		Zinc oxide cream[62]	Skin lesion		Likely	No		
		Topical antivirals	Infection (viral)		No trials	No		
		Topical antivirals	Pain		No trials	No		
24.	Perioral dermatitis (1)	Clean with water	Prevention		No trials	No	Poor	Yes
		Topical metronidazole[63]	Infection	Bacterial infection	Likely	No		
		Tetracycline	Infection	Bacterial infection	No	No		
25.	Oral thrush (1)	Nystatin[64]	Infection	Fungal infection	Less effective than miconazole	No	Good	No
		Miconazole[64]	Infection	Fungal infection	Yes	Yes		
26.	Salmon patch (0)	No treatment is needed					None	No
27.	Chloasma (3)	Hydroquinone, tretinoin, hydrocortisone combination[65,66]	Skin irritation		Yes	No	Moderate	Yes
		Hydroquinone [67]	Skin irritation		Yes	No		
28.	Rosacea (2)	**Topical metronidazole**[68]	Infection	Bacterial infection	Yes	Yes	Moderate	Yes
		Azelaic acid[68]	Infection	Bacterial infection	Yes	Yes		
		Zinc-sulphate[69]	Infection	Bacterial infection	Yes	No		
		Tetracycline[68]	Infection	Bacterial infection	Yes	No		
29.	Umbilical problems in infants (0)	Disinfectant liquid	Infection	Bacterial infection	No trials	-	None	Yes
		Antiseptic dressing	Infection	Bacterial infection	No trials	-		
		Silver nitrate	To stop granulations		No trials	-		
		Electrocauterization	To stop granulations		No trials	-		
30.	Nappy rash (2)	**Zinc oxide cream**[70]	Skin lesion		Yes	Yes	Moderate	Yes
		Miconazole[71]	Infection	Fungal infection	Yes	No		
		Hydrocortisone	Itch	Itch	No trials	No		
31.	Fish hook in finger (0)	Local extirpation	Skin lesion		No trials	-	None	No
32.	Splinter under nail (0)	Splinter removal	Skin lesion		No trials	-	None	No
33.	Subungual hematoma (1)	Making a hole in the nail[72]	Discharging hematoma		Likely	No	Moderate	Yes
34.	Brittle nails (0)	Terbinafine (oral)	Infection		No trials	No	None	Yes
		Itraconazole (oral)	Infection		No trials	No		
35.	Paronychia (0)	Antibiotics	IInfection (bacterial)	Bacterial infection	No trials	No	Poor	Yes
		Drainage	Discharging pus		No trials	No		
		Antifungal cream	Infection	Fungal infection	No trials	No		

TABLE (cont.)

The treatment of minor dermatologic ailments: What the research tells us

Treatments for which sufficient positive evidence exists are highlighted in green; those for which negative evidence exists are highlighted in red.

	Dermatological minor ailment (N*)	Treatment	Target for treatment	Category of treatment target, according to main symptoms	Was treatment effective?	Was the research convincing?†	Overall rating of research evidence	Are further studies required?
36.	Fungal infection of the nail (3)	**Local treatment (imidazole)**[73]	Infection	Fungal infection	Yes	Yes	Good	No
		Oral terbinafine[74,75]	Infection	Fungal infection	Yes	Yes		
37.	Calluses on the feet (1)	Removing the excess callus[76]	Removing callosity		Yes	No	None	Yes
		Disinfectant ointment	Infection		No trials	No		
38.	Ingrown nail (2)	**Wedge excision**[77,78]	Removing infected tissue		Yes	Yes	Good	Yes
		Chemical ablation[77,78]	Destruction nail matrix		Yes	Yes		
39.	Corns (1)	Salicylic acid	Resolution callosity		No trials	No	None	Yes
		Excision[76]	Removing callosity		Yes	No		
40.	Athlete's foot (1)	**Imidazole**[79]	Infection	Fungal infection	Yes	Yes	Good	No
		Imidazole + hydrocortisone[79]	Infection/itch	Fungal infection /itch	Yes	Yes		
		Itraconazole[79]	Infection	Fungal infection	Yes	Yes		
41.	Foot blisters (2)	Betadine	Infection	Bacterial infection	No trials	No	Moderate	Yes
		Antiperspirant [80,81]	Reducing incidence of blisters		Yes	Conflicting		
42.	Plantar warts (4)	**Salicylic acid** [29]	Lump on the skin		Yes	Yes	Moderate/ good	Yes
		Cryotherapy [29]	Lump on the skin		No	No		
		Duct tape occlusion[30-32]	Lump on the skin		No	Yes, treatment was not effective		
		Surgical procedures	Lump on the skin		No trials	No		

*N=Number of trials.
† Convincing evidence taken as level of evidence 1a or 1b.