Phototherapy in the management of atopic dermatitis: a systematic review
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CRD summary
This review compared different phototherapy regimens for treating patients with atopic dermatitis (AD). It concluded that medium doses of ultraviolet A may be effective in treating acute flares of AD, while narrow-band ultraviolet B may be effective for managing chronic AD. Given that the review had several methodological limitations, the authors’ conclusions may not be reliable.

Authors' objectives
To identify the most effective schedule for treating atopic dermatitis (AD) with phototherapy.

Searching
MEDLINE and the Cochrane CENTRAL Register were searched from inception to May 2006; the search terms were reported. In addition, references from relevant articles were handsearched. Publications were restricted to those reported in English.

Study selection
Studies involving human participants with AD were eligible for inclusion. Studies limited to participants with hand dermatitis were excluded. The included participants were treated for severe, acute or chronic AD.

Studies using ultraviolet (UV) phototherapy were eligible for inclusion. Studies allowing unmonitored use of corticosteroids or immunomodulators were excluded. The included studies compared phototherapy UVA1 (wavelength 340 to 400 nanometres) at high (130 Joules/centimetre$^2$, J/cm$^2$), medium (50 J/cm$^2$), or low (10 J/cm$^2$) doses with UVA1 cold-light (UVA1c), combined UVA and UVB (UVAB), topical corticosteroids, narrow-band UVB, or another dose of UVA1. The included studies also compared UVA or UVB with combined UVAB, or UVB with narrow-band UVB or broad-band UVA. The controls were the participants themselves and involved shielded buttocks.

No inclusion criteria were specified for the outcomes of interest. The primary outcomes for the included studies were reductions in condition severity, as measured by the Costa score, the severity scoring of atopic dermatitis (SCORAD) index, pruritis and healing score, and patient preference and self-reported effectiveness. Cumulative doses of treatment and side-effects were also reported.

Controlled clinical trials were eligible for inclusion.

Three reviewers screened the titles and abstracts of reports for relevance. Any discrepancies were resolved by reviewing the full paper.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Three reviewers independently extracted the data to calculate differences between baseline and end point data for each study. Any discrepancies were resolved by reviewing the original manuscript.

Methods of synthesis
The studies were grouped by condition (acute versus chronic) and presented as a narrative synthesis and in tables. Differences in treatment modality and dosing regimen were presented as a narrative synthesis and in tables for each study.

An assessment of publication bias was not reported.
Results of the review
Nine studies (n=381: 230 with acute AD and 151 with chronic AD) were included in the review. Reported cumulative doses ranged from 24.8 to 1,950 J/cm$^2$, and treatment durations varied between 10 days and 12 weeks, or until clearance. The sample sizes ranged from 9 to 120 patients. Three studies reported follow-up at 1, 3 or 6 months.

Treatment of acute AD with UVA1 (3 trials).

Trends suggested that phototherapy with UVA1 is more effective than UVAB and topical corticosteroids. UVA1 response times were faster in comparison with UVAB, with peak response after 10 treatments. One study reported UVA1c to be slightly more effective in reducing the severity of acute AD compared with UVA1 up to 1 month post-treatment.

One study reported no significant differences between high-, medium- and low-doses of UVA1, while one study reported a greater reduction in the SCORAD index after 3 weeks of treatment using medium compared with low doses.

Treatment of chronic AD with UV phototherapy (4 trials).

Significant differences were reported between UVAB and UVB scores, with greater improvements observed in pruritis or healing scores, overall evaluation and total scores using UVAB. Two studies reported significant improvements in disease activity using narrow-band UVB compared with UVA, medium-dose UVA1 and visible light therapy.

Side-effects and patient opinions were reported in the review.

Authors’ conclusions
Phototherapy with medium-dose UVA1, when available, may be the most effective treatment for acute flares of AD, while narrow-band UVB may be most effective for managing chronic AD.

CRD commentary
The review question was clear, but inclusion criteria were not defined for the outcomes of interest. Limited literature searches were conducted using two electronic databases, and the references of relevant articles were searched manually. In addition, restrictions on language of publication might have introduced language bias. This, together with the fact that there was no apparent search for unpublished material, means it is possible that relevant papers were missed. Attempts were made to minimise reviewer error and bias. However, the absence of a validity assessment means that the reliability of the included studies and their subsequent synthesis is unclear. There were various methodological differences between the studies, such as different administration techniques and UV doses, which limited the data synthesis. In addition, the sample sizes were small. Given these limitations, the authors' conclusions may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that UVA1 may be ideal for flaring AD patients in which rapid control is desired. Phototherapy with UVB modalities, particularly narrow-band UVB, should be used to manage chronic AD. No recommendations can be made for the optimal maintenance regimen after UVA1 for acute AD, or for paediatric AD patients.

Research: The authors stated that future studies should include standardised dosing regimens, cumulative exposures, UV wavelengths and patient evaluation methods to enable cross-comparisons.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.