

## What are the Effects of Photodynamic Therapy in Mycotic Nails? - a Systematic Review of Controlled Trials

### Citation

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### Review question

What are the Effects of Photodynamic Therapy in Mycotic Nails?

### Searches

A systematic search of the databases, PubMed Central, MEDLINE, ScienceDirect, Wiley Online and other sources.

Using the following search terms,

- Photodynamic therapy
- Onychomycosis

Restricted to articles published in English between 2005 and 2022

### Search strategy

[https://www.crd.york.ac.uk/PROSPEROFILES/313223\\_STRATEGY\\_20220302.pdf](https://www.crd.york.ac.uk/PROSPEROFILES/313223_STRATEGY_20220302.pdf)

### Types of study to be included

Controlled trials will be included

All other study types will be excluded

### Condition or domain being studied

Onychomycosis

### Participants/population

Humans of all ages with onychomycosis treated with photodynamic therapy.

Onychomycosis affecting either toenails or fingernails will be included.

Onychomycosis caused by either dermatophytes, yeasts or moulds will be included.

Any sub-type of Onychomycosis (distal lateral subungual onychomycosis, white superficial onychomycosis, proximal

subungual onychomycosis, endonyx onychomycosis, candidal onychomycosis, total dystrophic onychomycosis) will be included.

### Intervention(s), exposure(s)

Photodynamic therapy on mycotic nails

### Comparator(s)/control

Some studies may compare different photosensitisers used with photodynamic therapy

Some studies may compare photodynamic therapy to other antifungal treatments for onychomycosis

Some studies may compare different photodynamic therapy light doses

### Context

All settings and characteristics included

### Main outcome(s)

Efficacy of photodynamic therapy on mycotic nails, in controlled trials.

### Measures of effect

It is anticipated that controlled trials will use mycological cure, clinical cure and/or complete cure expressed as a percentage (of patients). The onychomycosis severity index (OSI) score may also be used in some controlled trials and the score compared pre and post treatment.

### Additional outcome(s)

Additional outcomes include,

- Photodynamic therapy mechanism of action, a review of the photosensitisers used in photodynamic therapy for onychomycosis and analysis of the photodynamic therapy protocols/wavelengths/light doses used.
- Analysis of the safety and side effects of photodynamic therapy reported in the controlled trials and comparison to that of the side effects of systemic oral antifungal medication.

### Measures of effect

### Data extraction (selection and coding)

Study Selection: A Prisma Flow Diagram will be used to record and display the study selection process including the number of records identified and the number of records included/excluded and why.

Data Extraction: Data extraction will include, study design/methodology, participant demographics, photodynamic therapy light dose/wavelengths, subtype of onychomycosis, cause of onychomycosis (dermatophyte, mould, yeast), number of treatments, treatment period, treatment follow-up.

All data from the study selection process and data extraction process will be made available for review and transparency.

### Risk of bias (quality) assessment

The Cochrane risk of bias 2 (RoB2) methodology will be used to report the risk of bias which will be presented in a

summary table in the systematic literature review. The Cochrane risk of bias methodology reports bias in the following domains,

- Bias arising from the randomisation process
- Bias due to deviations from intended intervention
- Bias due to missing outcome data
- Bias in measurement of the outcome
- Bias in selection of the reported result

All data from the risk of bias process will be made available for review and transparency.

### Strategy for data synthesis

Data will be drawn from all controlled trials identified in the study selection and data extraction process.

It is anticipated that outcome data will be limited if there are only a small selection of controlled trials involving photodynamic therapy and onychomycosis, but a systematic approach will still provide valid results. The systematic approach will be guided by the PRISMA check-list.

Data will be collected systematically by the author, recorded and displayed/provided in full in the systematic literature review.

Adaptations in reporting results may need to account for different definitions of 'clinical cure', 'mycological cure' or 'complete cure'. Preliminary searches show that it is likely that each trial may have used different treatment protocols where nanometre, fluence and/or illumination times differ. Also, the use of different photosensitisers will need to be accounted for so that suitable statistical measurement and comparisons can be made.

### Analysis of subgroups or subsets

See strategy for data synthesis

### Contact details for further information

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### Organisational affiliation of the review

University of South Wales  
<https://www.southwales.ac.uk/>

### Review team members and their organisational affiliations [1 change]

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Type and method of review

Systematic review

Anticipated or actual start date

14 March 2022

Anticipated completion date

01 August 2022

Funding sources/sponsors

None

Conflicts of interest

Language

English

Country

England

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Humans; Nails; Photochemotherapy

Date of registration in PROSPERO

04 March 2022

Date of first submission

03 March 2022

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

### Revision note

Updated Dr Peres's Title.

*The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.*

*The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.*

### Versions

04 March 2022

06 March 2022