Cochrane Library

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Light therapies for acne (Review)

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Why was this review important?

A lot of public interest:

- One of the top research priorities among both clinicians and patients (Acne Priority Setting Partnership, AAD guidelines)
- Estimate of global market potential for anti-acne skin preparations USD 3300 million in 2013

Limitations of current treatments:

- Effectiveness, adverse effects, poor tolerability, inconvenience
- Increasing concerns around antibiotic-resistant bacteria

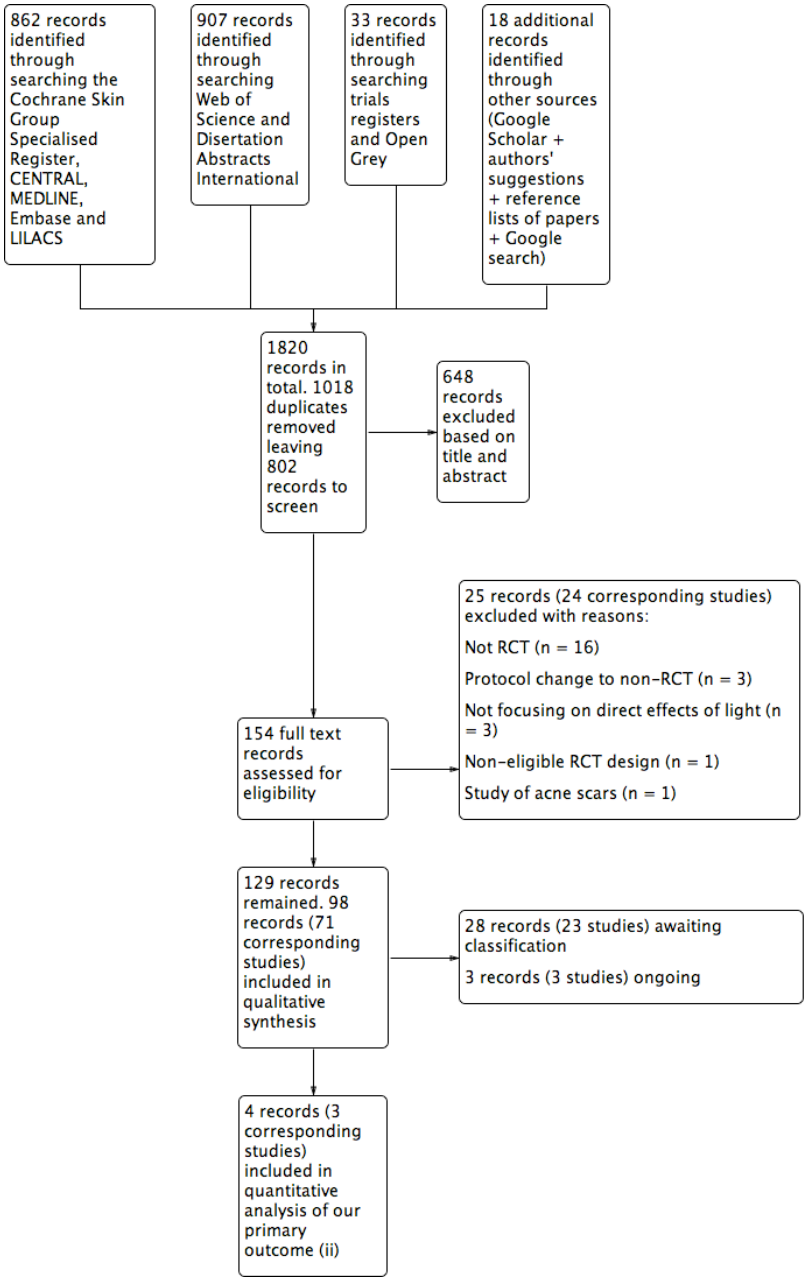
Evidence regarding efficacy not robust:

- Guidelines leave the recommendations open for most modalities, are not explicit, sometimes conflicting

Layton 2015, Zanglein 2016, GMR Data 2013, Nast 2012, Morton 2013, Williams 2012, Sanclemente 2014

What did this review find?

PRISMA Flow Chart



Barbaric 2016

What did this review find?

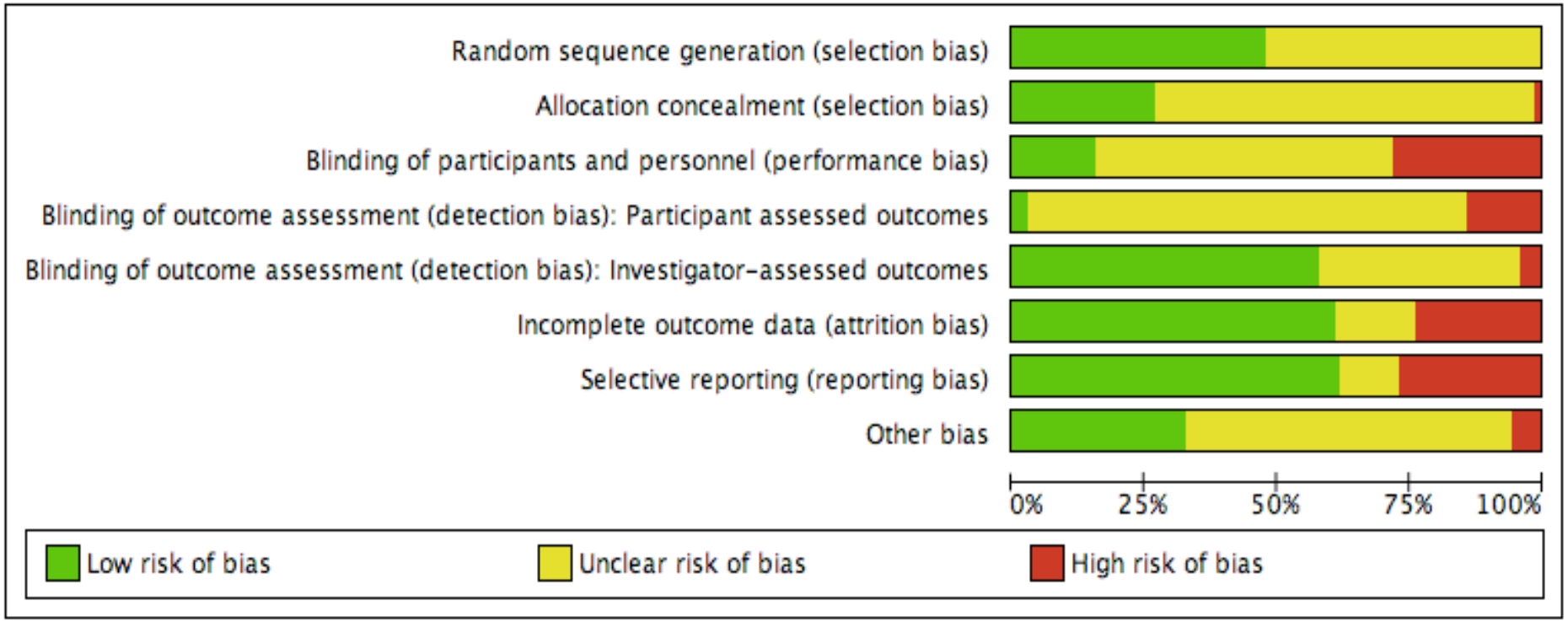
Light therapies (including photodynamic therapy) for acne vulgaris		
Patient or population: Mild, moderate and severe acne vulgaris **Settings:** Single and multicentre, worldwide **Intervention:** Light therapies including photodynamic therapy **Comparison:** Placebo, no treatment, topical treatment and other comparators		
Outcomes	No of participants (studies)	Quality of the evidence (GRADE)
Participant's global assessment of improvement Non-standardised scales Follow-up: up to 24 weeks after final treatment	1033 (23 studies)	⊕⊖⊖⊖ very low[1,2,3]
Investigator-assessed change in lesion counts Lesion counts Follow-up: up to 12 months after final treatment	2242 (51 studies)	⊕⊖⊖⊖ very low[1,2,3]
Investigator-assessed severe adverse effects Blistering or scarring Follow-up: up to 12 months after final treatment	3945 (66 studies)	⊕⊖⊖⊖ very low[1,2,3]

[1](-1) Risk of Bias Inconsistency
[2](-1) Indirectness Publication bias
[3](-1) Imprecision

Adapted from Barbaric 2016

What did this review find?

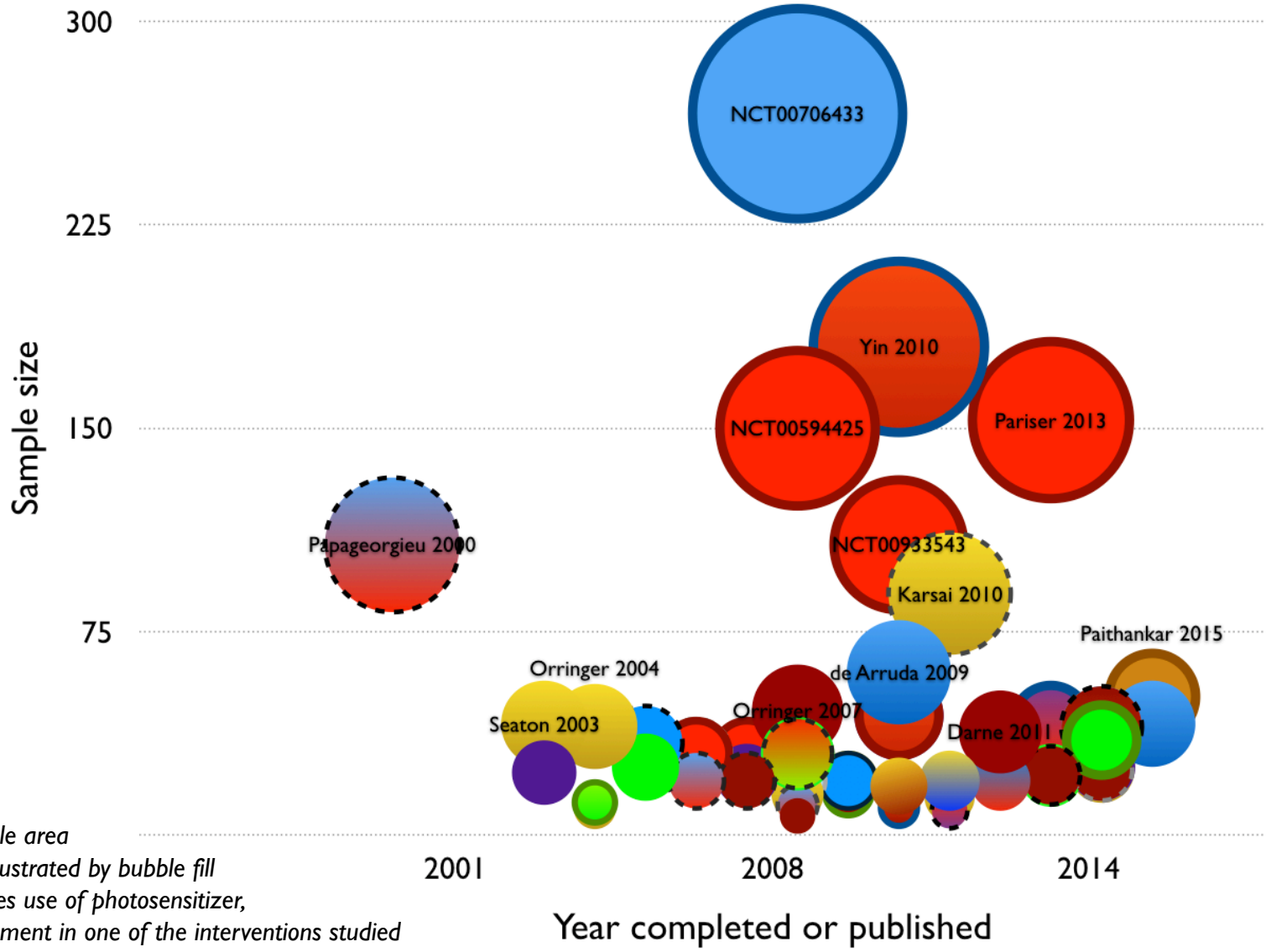
Summary Risk of Bias



Barbaric 2016

What did this review find?

Studies which included primary outcomes (i) and/or (ii), by sample size and year of completion or publication



Size values illustrated by bubble area
Color of light intervention(s) illustrated by bubble fill
Bubble outline: full line indicates use of photosensitizer, dotted line use of topical treatment in one of the interventions studied

Key findings

(i) Participant's global assessment of improvement

- 20% aminolevulinic acid (ALA)-PDT (blue light) vs vehicle plus blue light: little or no difference in effectiveness
- 20% ALA-PDT (red light) no more effective than 15%, but better than 10% and 5% ALA-PDT (red light)

(ii) Investigator-assessed changes in lesion counts

- 80 mg/g methyl aminolevulinate (MAL) PDT (red light) no different to placebo cream plus red light in change in inflamed lesions (ILs), percentage change in ILs, change in non-inflamed lesions (NILs), or in percentage change in NILs

Studies comparing the effects of other interventions inconsistent /small samples/high risk of bias > only narrative synthesis:

- Yellow light versus placebo or no treatment
- Infrared light versus no treatment
- Gold microparticle suspension versus vehicle plus light
- Clindamycin/benzoyl peroxide (C/BPO) plus PDL versus C/BPO alone

No clinically significant difference in effectiveness

(iii) Investigator assessed severe adverse effects

- Scarring reported as absent, blistering only in studies on IPL, infrared light and PDT

80 mg/g MAL + red light vs. placebo cream + red light at 6 weeks
Investigator-assessed change in:

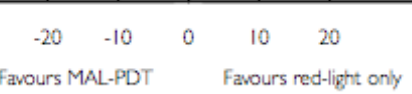
Inflamed Lesions

Study or subgroup	80 mg/g MAL plus red light N	Mean(SD)	Placebo cream plus red light N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
NCT00594425	48	-11 (12.06)	52	-10.2 (12.47)		44.4 %	-0.80 [-5.61, 4.01]
NCT00933543	54	-14 (17.94)	53	-13.8 (23.76)		24.2 %	-0.20 [-8.19, 7.79]
Pariser 2013	100	-15.6 (16.37)	53	-7.8 (21.39)		31.4 %	-7.80 [-14.39, -1.21]
Total (95% CI)	**202**		**158**			**100.0 %**	**-2.85 [-7.51, 1.81]**

Heterogeneity: $Tau^2 = 6.68$; $Chi^2 = 3.27$, df = 2 (P = 0.19); I^2 =39%

Test for overall effect: Z = 1.20 (P = 0.23)

Test for subgroup differences: Not applicable



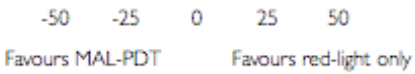
Non-Inflamed Lesions

Study or subgroup	80 mg/g MAL plus red light N	Mean(SD)	cream plus red light N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
NCT00594425	48	-11.3 (17.12)	52	-4.4 (25.63)		31.8 %	-6.90 [-15.38, 1.58]
NCT00933543	54	-14.3 (26.55)	53	-17.1 (25.84)		23.9 %	2.80 [-7.13, 12.73]
Pariser 2013	100	-11.8 (18.95)	53	-10.7 (22.09)		44.3 %	-1.10 [-8.11, 5.91]
Total (95% CI)	**202**		**158**			**100.0 %**	**-2.01 [-7.07, 3.05]**

Heterogeneity: $Tau^2 = 2.23$; $Chi^2 = 2.24$, df = 2 (P = 0.33); I^2 =11%

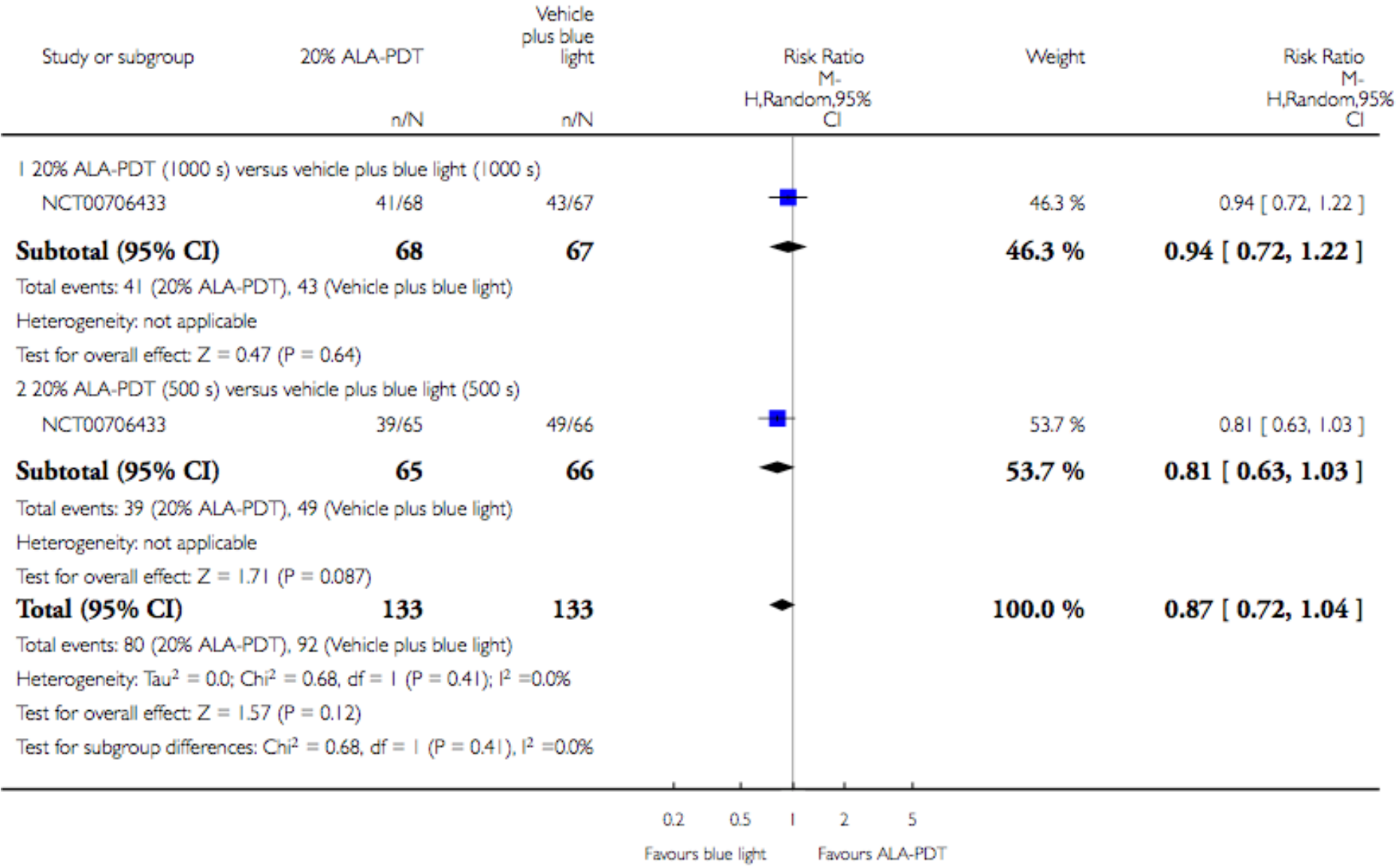
Test for overall effect: Z = 0.78 (P = 0.44)

Test for subgroup differences: Not applicable



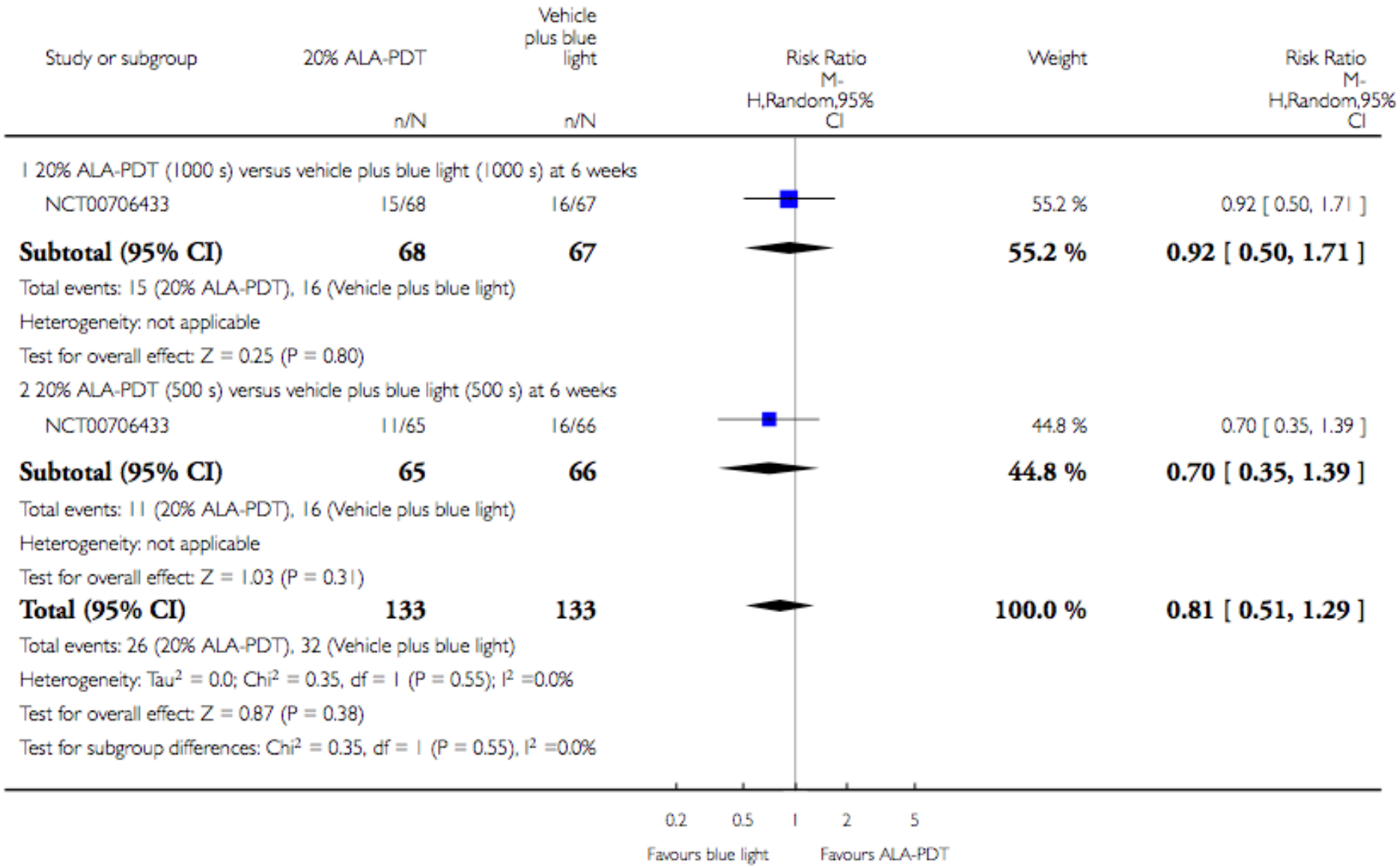
20% ALA + blue light vs vehicle + blue light at 6 weeks

Participant's global assessment of improvement



20% ALA + blue light vs vehicle + blue light at 6 weeks

Investigator's global assessment of improvement



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Questions?

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