LIGHT EMITTING DIODE VERSUS CONVENTIONAL PHOTOTHERAPY FOR THE TREATMENT OF NEONATAL HYPERBILIRUBINEMIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: The efficacy of phototherapy for neonatal jaundice depends on a number of factors, including the spectrum of light emitted. Various light emitting diode (LED) phototherapy devices have been trialled on the assumption of a more effective spectral distribution of the light emitted.

Objectives: We reviewed the current literature to determine whether, in jaundiced newborns, LED phototherapy is more effective than conventional phototherapy in lowering total serum bilirubin (TSB).

Data sources: The PubMed, EMBASE and Cochrane Central Register (Clinical Trials) databases were searched.

Study eligibility criteria, participants, interventions: Studies eligible for inclusion were randomized controlled trials of LED versus conventional phototherapy conducted on neonatal hyperbilirubinemia, published in peer reviewed journals.

Study appraisal and synthesis methods: Studies were found to be of medium quality based on a components approach. Results were statistically aggregated within a very homogeneous population (term or late preterm neonates) and appeared robust when sensitivity analyses were performed.

Results: LED and conventional phototherapy devices appeared to be equally effective in reducing TSB in term or late preterm neonates (pooled average difference in rate of decrease of TSB was 0.194 $\mu\text{mol/L/h}$ [0.011 mg/dL/h] in favour of LED phototherapy, $p=0.378$), and had comparable incidence of adverse events.

Limitations: The methodological quality of the studies included and the possible presence of publication bias are the main limitations.

Conclusions and Implications of key findings: Further randomized controlled trials are needed to ascertain whether LED phototherapy may be more effective when increasing the spectral power, or in certain selected subpopulations.