



ORIGINAL ARTICLE

Is home phototherapy in the term neonate with physiological jaundice a feasible practice? A systematic literature review

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KEYWORDS

Home phototherapy;
Neonatal jaundice;
Physiological jaundice;
Hyperbilirubinemia;
Neonatal community care

Abstract *Background:* Home phototherapy programmes are being developed internationally despite concerns of their safety and feasibility. The NICE guideline on Neonatal Jaundice published in 2010 does not acknowledge these practices. However, a drive towards early hospital discharge with increasing financial pressures to move care into the community has raised an important question of “Is home phototherapy in the term neonate with physiological jaundice a feasible practice?”

Methods: A 3-stage literature review was carried out. Stage 1 selected inclusion criteria. Stage 2 assessed the evidence for methodological quality. Stage 3 extracted and synthesised data, grouping it into ten themes applicable to the measurement of feasibility of home phototherapy.

Results: There was no high quality research available to support or refute home phototherapy. There are many differing and personal practices reported.

Conclusion: Practice is currently building an evidence base in the field of home phototherapy. Further research is required in context of newer technologies and guidelines. An awareness of the known risks and benefits within the limited evidence begins to determine the feasibility of home phototherapy in local areas.

Reference: National Institute for Health and Clinical Excellence (NICE), 2010. *Neonatal Jaundice*. NICE, London.

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Introduction

60% of term babies develop jaundice within the first week of life (NICE, 2010). Jaundice, caused

by hyperbilirubinemia, is one of the most common reasons for readmission to hospital during this time (Rennie, 2005). If left unmonitored or untreated, hyperbilirubinemia can result in encephalopathy or kernicterus, an untreatable brain injury with consequences of brain damage

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or death (Bhutani, 2005). The use of phototherapy was first reported in the late 1950's (Cremer et al., 1958) and is a widely accepted treatment for hyperbilirubinemia. National evidence-based guidelines outline recommendations of when to administer this treatment (NICE, 2010), although within these there is no acknowledgement of the practice of phototherapy being delivered at home. Home phototherapy has been delivered in the United States of America (USA) (Heiser, 1987), the United Kingdom (UK) (Walls et al., 2004), Australia (Jackson et al., 2000), Malaysia (Adlina et al., 2007), and Iran (Khatami and Soltani, 2007), although controversies about the safety and feasibility of this treatment remain.

Objective

The objective was to carry out a review of the literature, aiming to answer the research question of "Is home phototherapy in the term neonate with physiological jaundice a feasible practice?" This feasibility aspect is defined as whether this strategy of new service delivery would work in practice (Johnson et al., 2006). By searching, evaluating, and synthesising the data available it will highlight the potential risks and benefits of home phototherapy allowing healthcare professionals to make an informed, evidence-based decision on the feasibility of the treatment in their local area.

Methods

During May and June 2014, and in April 2015 databases searched were Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, Embase, Medline, and the Cochrane Library. Key search terms were phototherapy, home, community, newborn*, infant*, baby and neonat*. Assistance was provided by librarians to ensure databases were used most effectively and it proved that these wider search terms in comparison to terms such as 'feasibility' were appropriate in gathering evidence of home phototherapy. Search terms were combined using Boolean logic to locate articles relevant to the topic. The review was then carried out in 3 stages.

Stage 1 determined and applied Inclusion/Exclusion criteria. Only articles in the English language, during the time period of home phototherapy (1970–2014), focussing on term babies having home phototherapy for physiological

jaundice, or guidance or opinion papers surrounding home phototherapy practice were considered. Contact was made with an expert in the field for any work as yet unpublished. Evidence was then summarised into a results flow chart including number of hits, how many were discarded or duplicated, and how many needed further review to reach data saturation. 47 key papers were initially identified on title and/or abstract alone. Inter-library loans were then used for obtaining evidence not sourced locally and reference lists were reviewed to identify any new articles. These articles progressed to Stage 2.

Stage 2 was the assessment of methodological quality. 25 papers were either excluded on early evaluation as unlikely to produce useful data, poor methodological quality identified on initial reading, or useful for background knowledge. Critical appraisal tools were used to assess the methodological quality of the remaining 22 papers, and consider its validity, results, and relevancy to the research question. *Critical Appraisal Skills Programme (RCT)*, Young and Solomon (2009), Cluett and Bluff (2000), Polit and Beck (2006) were the chosen tools in accordance to the research design, user efficiency and familiarity. The remaining key papers consisted of 11 research studies, 5 opinion papers, 4 guidelines, 1 PhD thesis, and 1 cochrane review (See Table 1).

Stage 3 was data extraction. An article review sheet was formulated to extract data from the evidence that was either supportive of or highlighted risks or barriers of home phototherapy. This was analysed using any extracted themes to determine how home phototherapy feasibility may be measured.

Results

There were ten themes extracted from the key papers enabling home phototherapy evidence to be discussed in terms of feasibility. These themes were:

- Safety
- Logistics
- Bilirubin reduction
- Healthcare system
- Drivers (including cost)
- Compliance (Parents and Medical)
- Phototherapy equipment
- Parental satisfaction
- Culture
- Professional opinion

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