

## Article

# Safety and Efficacy of Filtered Sunlight in Treatment of Jaundice in African Neonates

Tina M. Slusher, MD<sup>a, b</sup>, Hendrik J. Vreman, PhD<sup>c</sup>, Bolajoko O. Olusanya, MD, PhD<sup>d</sup>, Ronald J. Wong, BA<sup>c</sup>, Ann M. Brearley, PhD<sup>e</sup>, Yvonne E. Vaucher, MD, MPH<sup>f</sup>, and David K. Stevenson, MD<sup>c</sup>

+ Author Affiliations

## ABSTRACT

**OBJECTIVES:** Evaluate **safety and efficacy of filtered**–sunlight phototherapy (FS–PT).

**METHODS:** Term/late preterm infants  $\leq 14$  days old with clinically significant jaundice, assessed by total bilirubin (TB) levels, were recruited from a maternity hospital in Lagos, Nigeria. Sunlight was **filtered** with commercial window–tinting films that remove most UV **and** significant levels of infrared light **and** transmit effective levels of therapeutic blue light. After placing infants under an FS–PT canopy, hourly measurements of axillary temperatures, monitoring for sunburn, dehydration, **and** irradiances of **filtered** sunlight were performed. Treatment was deemed safe **and** efficacious if infants were able to stay in FS–PT for  $\geq 5$  hours **and** rate of rise of TB was  $< 0.2$  mg/dL/h for infants  $\leq 72$  hours of age or TB decreased for infants  $> 72$  hours of age.

**RESULTS:** A total of 227 infants received 258 days of FS–PT. No infant developed sunburn or dehydration. On 85 (33%) of 258 treatment days, infants were removed briefly from FS–PT due to minor temperature–related adverse events. No infant met study exit criteria. FS–PT was efficacious in 92% (181/197) of evaluable treatment days. Mean  $\pm$  SD TB change was  $-0.06 \pm 0.19$  mg/dL/h. The mean  $\pm$  SD (range) irradiance of FS–PT was  $38 \pm 22$  (2–115)  $\mu\text{W}/\text{cm}^2/\text{nm}$ , measured by the BiliBlanket Meter II.

**CONCLUSIONS:** With appropriate monitoring, **filtered** sunlight is a novel, practical, **and** inexpensive method of PT that potentially offers safe **and** efficacious treatment strategy for management of neonatal jaundice in tropical countries where conventional PT treatment is not available.

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## Key Words:

newborn jaundice hyperbilirubinemia sunlight phototherapy irradiance UV IR low–middle income countries

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