Development of an Improved High Intensity Off-Grid Phototherapy System to Provide Treatment in Remote Regions of the World

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Jaundice affects millions of newborns globally. It’s the seventh leading cause of death and most common condition requiring medical attention in newborns. This project involved a complete redesign of the prototype. Research encompassed identifying and testing the best treatment modalities: Double phototherapy, close verses distant phototherapy, and maximizing light intensity output. This redesign utilized 12 Volt DC High Intensity lights (replacing 24 Volt DC, Standard Intensity lights) producing a “new” system emitting twice the LED light energy of the prototype. Six new, and distinct, variations were incorporated, allowing for a wider-range, and more diverse, scope of testing. Changes consisted of: A 12 Volt DC operating system, utilization of High Intensity LED lights, conversion to true Off-Grid capability (12 Volt DC) permitting direct powering from solar panels, installation of digital Hobbs meter allowing clinicians and caregivers to record phototherapy duration, 25 percent reduction in size, and more efficient electrical system maximizing lifespan of the High Intensity lighting system. This system achieves true “Intensive" treatment capability by providing both anterior and posterior phototherapy sessions as this “new” systems’s LED light arrangement results in the maximization of coverage of a baby’s body surface. There are 1,600 blue LED lights per box producing blue light over the incredibly narrow wavelength range of 5 nanometers. The Baby Cure 2.0 Phototherapy System is unique because it is an inexpensive, safe, portable system, capable of providing extremely effective phototherapy treatment, and saving babies lives anywhere in the world, regardless of access to an electrical grid.

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