



BiliTouch™ LED Phototherapy Blanket

Treat Infant Jaundice while
Promoting Healthy Bonding



The BiliTouch™ by Motif Medical uses the newest technology to give you and your new baby the most effective and user-friendly home infant jaundice care available.

Abstract

Phototherapy has been the primary treatment modality for newborn jaundice for around the last 50 years. This treatment is widely used, relatively inexpensive, and noninvasive.

Overall, the therapy has been highly effective in reducing bilirubin levels, but has disadvantages to other aspects of newborn care, such as difficulty in holding and breastfeeding the baby during therapy, inability to maintain therapy while taking baby to necessary appointments, low battery life, and general bulkiness. Newer LED phototherapy blankets have been on the market for a few years, but had some disadvantages as well, such as small size.

The Motif BiliTouch™ blanket has sought to solve these problems and provide an optimum phototherapy treatment solution that has maximum efficacy for reducing bilirubin yet is also easy to use by parents at home.



Newborn Jaundice

New parents may feel overwhelmed to find out that their new baby has a diagnosis of infant jaundice. They are not alone – infant jaundice is quite common, affecting one in two infants globally.

Jaundice in newborns is caused by an accumulation of bilirubin in the blood. Bilirubin is a compound that results from the normal breakdown of red blood cells. In infants, the liver may not be mature enough yet to filter and get rid of the bilirubin in the blood. This bilirubin accumulation is what causes the characteristic yellow color, often noticeable on the skin and whites of the eyes.^[1]

Effects on the Body

Left untreated, newborn jaundice can result in a condition called kernicterus. Kernicterus is a type of brain damage that can result from elevated levels of bilirubin in the blood. It often manifests as athetoid cerebral palsy and hearing loss in babies. Kernicterus can also cause poor vision, dental issues, and learning disabilities. Early detection and treatment are key to preventing these devastating outcomes.^[2]



Prevalence

Due to the prevalence and danger of untreated jaundice, babies born in the hospital are routinely tested by obtaining bilirubin blood levels prior to discharge. Bilirubin can be checked with a light meter placed on the baby's head to obtain a transcutaneous bilirubin (TcB) level. If this is high, then a blood test will be ordered. More commonly, babies are tested with a small blood sample taken from the baby's heel. If it is high, treatment will likely follow, as well as repeated blood samples to gauge treatment effectiveness. While these first levels in the hospital may be an early indicator, bilirubin levels typically peak between 3 to 5 days after birth – making that first pediatric checkup especially important to detect jaundice.^[3]

OVERVIEW

Symptoms

Sometimes parents notice the change in skin tone themselves as jaundice worsens. Other signs and symptoms include:

- Baby is hard to wake up (lethargic), or will not sleep at all
- Is not breastfeeding or sucking from a bottle well.
- Very fussy
- Does not have at least 4-6 wet diapers in 24 hours or 3-4 stools per day by the fourth day

Any of these symptoms are a reason to see the pediatrician for evaluation. For many infants, the high levels of bilirubin go away naturally as the baby's liver develops. As baby feeds, this causes bilirubin to pass through the body - in most cases causing jaundice to disappear in two or three weeks.

Causes

There are several potential causes of newborn jaundice. The three main ones are:

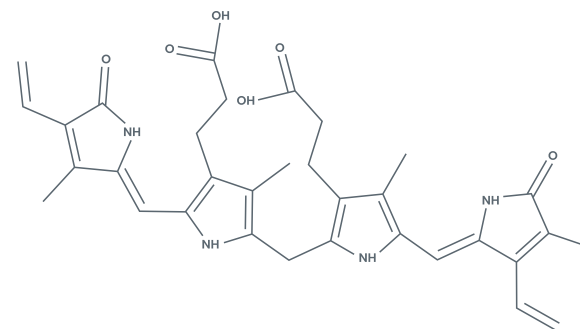
- Prematurity before 37 weeks gestation
- Difficulty feeding - either by breast milk or formula; or
- Babies whose blood type isn't compatible with the mother's blood type.

Other causes that are less common are: bruising at birth or other internal bleeding, liver problems, an infection, an enzyme deficiency, or an abnormal red blood cell condition.^[4]

While there is no real way to prevent all risk factors for newborn jaundice, routine prenatal care can help by ensuring that maternal blood type is tested to rule out the possibility of incompatibility, and to monitor for any conditions that might lead to premature birth.



The vast majority of infants that receive treatment for a high bilirubin level with associated jaundice do so via a phototherapy device.



Source: Motif Medical

Traditional, or fluorescent light phototherapy is accomplished by placing the baby under special blue-light bulbs, 15 to 20 cm away from the infant. This is usually done in the hospital, and baby must wear eye protection to protect the retinas.

Blanket phototherapy is done with a lighted pad placed under the baby. Sometimes this is used in combination with traditional therapy in the hospital. This is also the main type of phototherapy that can be done from home.

So, which is better?

While severe cases of hyperbilirubinemia, especially when accompanied by prematurity or other issues, may very well need to be treated in-hospital, the effectiveness of therapy blankets is much the same - especially when used correctly and with a good quality unit that has a larger surface area. Phototherapy blankets also promote normal infant care at home, and save costly days spent in the hospital.



Phototherapy Specifications

Light Spectrum

Research shows that bilirubin more readily absorbs light in the blue region of the spectrum, however, the light must also penetrate body tissue to reach the bilirubin, so light wavelengths for phototherapy are often a balance of the two needs. The most commonly used wavelength is 460–490 nm.

Spectral Irradiance

Spectral irradiance is measured in watts per centimeter over a wavelength band. The higher this measurement, the faster bilirubin levels decrease. Different phototherapy devices deliver significantly different levels of spectral irradiance. The American Academy of Pediatrics defines standard phototherapy spectra irradiance as 8–10 mW/cm² and intensive phototherapy as more than 30mW/cm² in the 430–490 nm band.^[7]



Effectiveness of LED Phototherapy Blankets

A comparative study published in the International Journal of Contemporary Pediatrics examined the effectiveness of halogen bulb therapy, fiber optic therapy, LED therapy, and various combinations.^[6] Therapy was conducted in a consistent manner among term infants with high bilirubin levels. Bilirubin levels were checked via heel stick every 12 to 24 hours. The results revealed that:

The study concluded that the rate of bilirubin decrease is faster with two-sided LED phototherapy. This type of therapy also exhibited the advantages of less-frequent side effects, less energy consumption, longer life span, and lower costs. The authors concluded:

“LED phototherapy seems to be the better option than current conventional phototherapy and combination phototherapies.”

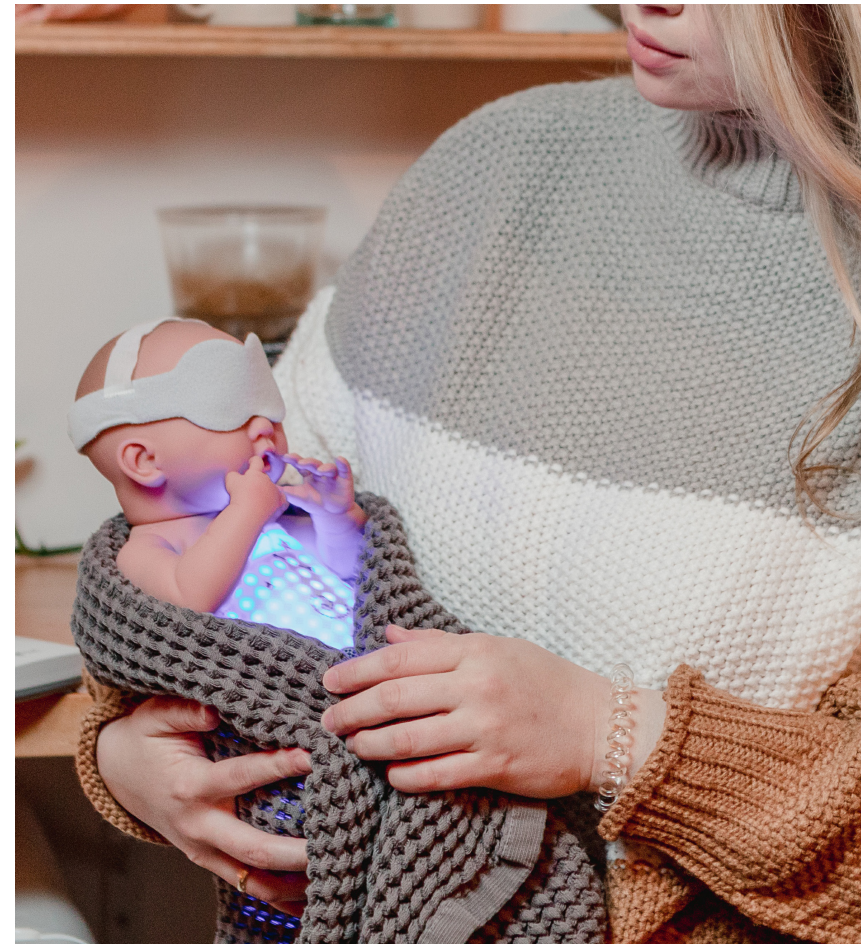
Note that this study was done on otherwise healthy, term infants and that more study is needed to evaluate LED phototherapy in infants with pathologic jaundice and severe hyperbilirubinemia.

The BiliTouch™ Phototherapy Blanket

Just as the name suggests, the BiliTouch™ allows the caregiver to hold, touch, and feed baby while providing ongoing LED phototherapy.

Older fiber-optic phototherapy is bulkier and stiff – nearly impossible to hold with the baby. This led to parents that were torn between needing to hold and comfort their baby and needing to maximize phototherapy time.

The LED-powered BiliTouch™ is FDA cleared, ultra-portable, and designed for ease of use and peace of mind. All of this adds up to better infant bonding in those crucial first few days and weeks, better compliance with treatment, and less stress for parents.



LONG BATTERY LIFE



LED LIGHTS



COST-EFFECTIVENESS



SURFACE AREA &
TWO-SIDED THERAPY



QUIET



PORTABILITY



EASE OF USE



PORTABILITY FOR
MOTHER/BABY BONDING

The BiliTouch™ Phototherapy blanket provides the following advantages:

Long Battery Life

The unit is battery powered, with a battery life that is longer than any competitors, at 8 to 24 hours.

Quiet

The BiliTouch™ blanket features whisper-quiet operation, providing a peaceful environment for baby.

LED Lights

The LED light source features multiple light intensity levels, depending on what is prescribed, and meets all safety standards. The LED lights are adjustable in intensity and feature High ($63 \pm 10 \mu\text{W}/\text{cm}^2/\text{nm}$) and Low ($33 \pm 10 \mu\text{W}/\text{cm}^2/\text{nm}$) settings, depending on the level of therapy prescribed. The wavelength is between 455 and 465 nm, within the recommended range for optimum absorption and effectiveness. The unit stays cool to protect baby's delicate skin, and also has a safety shut-off if the unit gets too warm.

Portability

Even in the first few days and weeks at home, there will be several times that baby will need to go out to doctor's appointments, or perhaps with parents for an important errand. The BiliTouch™ is designed for just that. It weighs a mere 1.57 lbs. with pad and control unit, and with the long battery life parents need not worry. It is very possible to attend doctor appointments or run to the pharmacy without disrupting therapy. The unit also has a wrist strap for safe carry.

Surface Area & Two-Sided Therapy

The BiliTouch™ has more lighted surface area than competitors – at 16"x4". This is enough for baby to get complete light exposure, and also to wrap the blanket around baby for 2-sided therapy. See Figure 1 for some comparisons of surface area and leading blankets on the market.

Cost-Effectiveness

BiliTouch™ therapy is cost-effective with an overall longer product life-span and less energy consumption. BiliTouch™ therapy is covered by most insurance plans and Medicaid.

Portability for mother/baby bonding

All new parents know that the special bonding time in those first few days is precious, and a once-in-a-lifetime experience. BiliTouch™ understands this too. That is why the unit is specifically designed to promote holding, cuddling, feeding, and rocking your baby while therapy is ongoing. This bonding promotes attachment, and research shows a host of other benefits:^[8]

- Emotional attachment helps prevent diseases in baby by boosting immunity
- Enhances a child's IQ
- Helps regulate the mother's postpartum hormones
- Stimulates healthy breastfeeding
- Promotes regular infant sleeping patterns

Ease of Use

The BiliTouch™ is tired-parent-functioning-on-autopilot proof! It is easy to operate, with a convenient timer to set if you worry about forgetting to turn it off. (If a certain number of hours are prescribed). Simply follow your pediatrician's recommendation for level – High or Low – and hours of therapy.

The blanket can provide one-sided or two-sided therapy, simply by repositioning or wrapping the baby. This allows baby to also be swaddled, held, cuddled, and all of the things that go with a newborn.

For a summary of the BiliTouch™ advantages and comparison to competitors, please see Table 1 (on page 9).

BRAND	MOTIF MEDICAL	GE	PHILLIPS
Product	BiliTouch™	Bilisoft	BiliTx
FDA Cleared	✓	✓	✓
Two-Sided Treatment	✓	✓	✓
Battery-Powered Option	✓		
Ultra Portable	✓		
LED Light	✓	✓	✓
Illuminated Area	16" x 4"	10" x 12'	3" x 14"
Intensity	63±10 µW/cm2/nm (High) 33±10 µW/cm2/nm (Low)	49±25% µW/cm2/nm (Large Pad)	30 µW/cm2/nm (Standard Panel)



Table 1. BiliTouch™ advantages and comparison to competitors

Learn More about BiliTouch™

Learn more about BiliTouch™ – either for your own needs, or those of your patients. The representatives at Motif Medical are ready to answer your questions and demonstrate products.

Reach out via email at: hello@motifmedical.com

Call to speak to customer service at: (844) 272-8390

Contact us from our web page at: motifmedical.com/contact-us/



References

1. Brits, Hanneke, Jeanie Adendorff, Dyanti Huisamen, Dahne Beukes, Kristian Botha, Hanre Herbst, and Gina Joubert. 2018. "The Prevalence Of Neonatal Jaundice And Risk Factors In Healthy Term Neonates At National District Hospital In Bloemfontein". *African Journal Of Primary Health Care & Family Medicine* 10 (1). doi:10.4102/phcfm.v10i1.1582.
2. "What Are Jaundice And Kernicterus? | CDC". 2020. Centers For Disease Control And Prevention. <https://www.cdc.gov/ncbddd/jaundice/facts.html#:~:text=This%20yellow%20coloring%20is%20called,cerebral%20palsy%20and%20hearing%20loss>.
3. "Newborn Jaundice: Causes, Symptoms, Treatment, And Prevention". 2021. Healthline. <https://www.healthline.com/health/newborn-jaundice>.
4. "Infant Jaundice - Symptoms And Causes". 2021. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/infant-jaundice/symptoms-causes/syc-20373865>.
5. Porter, Meredith, and Maj. Dennis. 2002. "Hyperbilirubinemia In The Term Newborn". *American Family Physician* 65 (4): 599. <https://www.aafp.org/aafp/2002/0215/p599.html#afp20020215p599-b5>.
6. Yenamandra, Kamal & Kumar, Rajesh & Garg, Ajoy & Kumar, Vivek & Singh, Daljit. (2018). "Comparison of effectiveness of light emitting diode phototherapy with conventional phototherapy and combination phototherapy of conventional with fiberoptic biliblanket, and light emitting diode phototherapy with fiber optic biliblanket for treatment of neonatal hyperbilirubinemia." *International Journal of Contemporary Pediatrics*. 5. 2042. 10.18203/2349-3291.ijcp20184269.
7. "Phototherapy For Jaundice: Background, Indications, Contraindications". 2021. Emedicine.Medscape.Com. <https://emedicine.medscape.com/article/1894477-overview>.
8. Onderko, Patty. The New Science of Mother-Baby Bonding, Parenting.com Accessed 6.21.2021 at <https://www.parenting.com/baby/the-new-science-of-mother-baby-bonding/>