

Clinical Policy: Phototherapy for Neonatal Hyperbilirubinemia

Reference Number: CP.MP.150

Date of Last Revision: 10/23

[Coding Implications](#)

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See [Important Reminder](#) at the end of this policy for important regulatory and legal information.

Description

This policy details medical necessity criteria for home phototherapy for the treatment of neonatal hyperbilirubinemia. Almost all newborns will develop total serum bilirubin (TSB) levels greater than the upper limit of normal for adults, 1 mg/dL. Increasing TSB can cause jaundice, and newborns with severe hyperbilirubinemia are at risk for developing acute neurotoxicity as bilirubin crosses the blood-brain barrier. Acute bilirubin-induced neurologic dysfunction (BIND) can have chronic and permanent neurologic effects, termed kernicterus. Thus, screening for hyperbilirubinemia should be conducted on all infants prior to discharge.¹

Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation[®] that conventional phototherapy in the home, applied by a single light source in the blue-green spectrum (460 to 490nm), for the treatment of physiologic hyperbilirubinemia in *term* (≥ 38 weeks gestation) infants is **medically necessary** when meeting all of the following guidelines:
 - A. Term infant status is one of the following:
 1. Previously discharged home and readmission is being considered only for hyperbilirubinemia;
 2. Infant is currently inpatient and ready for discharge except for needing treatment for elevated bilirubin;
 - B. The infant is feeding well, is active, and clinically well;
 - C. If chestfeeding, lactation support from a qualified professional has been offered;
 - D. A primary care provider is willing to manage home care with established follow-up within 12 to 24 hours after discharge;
 - E. ≥ 48 hours old;
 - F. An LED-based phototherapy device will be available in the home without delay;
 - G. No previous phototherapy;
 - H. Total serum bilirubin (TSB) will be measured daily;
 - I. Infant has none of the following risk factors:
 1. Isoimmune hemolytic disease (i.e., positive direct antiglobulin test), glucose-6-phosphate dehydrogenase (G6PD), or other hemolytic disease;
 2. Hypoxic Ischemia Encephalopathy (HIE)/Asphyxia;
 3. Temperature instability;
 4. Sepsis;
 5. Acidosis;
 6. Albumin < 3.0 g/dL (if measured);
 7. Birth weight < 2500 g;
 8. Significant cephalohematoma or bruising;
 9. Weight loss $\geq 10\%$;
 10. Elevated direct-reacting/conjugated bilirubin;

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- 11. Jaundice appearing in first 24 hours of life;
- 12. Laboratory or clinical evidence of hypothyroidism;
- 13. Significant clinical instability in the previous 24 hours;
- 14. Clinical history of a parent or sibling requiring phototherapy or exchange transfusion;
- 15. Exclusive breastfeeding with suboptimal intake ($\geq 10\%$ weight loss);
- 16. Down syndrome;
- 17. Macrosomic infant of a diabetic mother;

J. TSB is within the levels noted in Table 1 below:

Table 1. Acceptable TSB levels for home phototherapy in infants without risk factors, by age:

Age	TSB Level
24 to 36 hours	≤ 11 mg/dL
36 to 48 hours	≤ 14 mg/dL
48 to 60 hours	≤ 15 mg/dL
60 to 72 hours	≤ 16 mg/dL
> 72 hours	≤ 17 mg/dL

***Note:** The TSB home phototherapy table above allows for conservative TSB levels to align with the lower age limit in hours provided in the age ranges for inpatient criteria for hyperbilirubinemia (see section II).

II. It is the policy of Centene Corporation that when criteria for home phototherapy are met, inpatient phototherapy for hyperbilirubinemia is **not medically necessary** unless documentation of extenuating circumstances (including, but not limited to, expected lack of compliance with therapy at home) is provided.

*** Note:**

- Infants should be admitted for inpatient phototherapy if the TSB concentration is more than 1 mg/dL above the American Academy of Pediatrics (AAP) guidelines phototherapy treatment threshold in the hyperbilirubinemia risk calculator at <https://peditools.org/bili2022/index.php>. The values in Table 1 above offer phototherapy at levels consistent with the AAP statement that phototherapy can be offered below the AAP treatment threshold per the provider’s discretion.
- Additional criteria for inpatient phototherapy for hyperbilirubinemia, to be used in conjunction with this policy, can be found in clinical decision support tools.

III. It is the policy of Centene Corporation that other treatment for hyperbilirubinemia, including inpatient phototherapy (when not meeting criteria for home phototherapy per this policy) and exchange transfusion, is **medically necessary** when meeting the most current version of the relevant nationally recognized decision support tools.

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Background

Efforts to reduce kernicterus include prevention and management of hyperbilirubinemia. Preventive strategies focus on identifying at-risk infants and beginning preventive therapeutic interventions as needed, usually through universal screening of all neonates for hyperbilirubinemia, which may be performed by measurement of total serum bilirubin (TSB) or by use of a transcutaneous device to obtain a Transcutaneous bilirubin (TcB) level.²

G6PD deficiency is now recognized as one of the most significant causes of hyperbilirubinemia leading to kernicterus. Identifying neonates with G6PD deficiency is challenging, so knowledge of certain risk factors for this deficiency can lead to improved health outcomes. G6PD deficiency is more common in males because it is a sex-linked recessive gene located on the X chromosome, and males only have one X chromosome. G6PD deficiency is prevalent in populations with genetic ancestry from Sub-Saharan Africa, Middle East, Mediterranean, Arabian Peninsula, and Southeast Asia. Additionally, 13% of African American males and 4% of African American females have G6PD deficiency.³

Phototherapy is considered first-line treatment for neonatal hyperbilirubinemia, defined as TSB > 95th percentile on the hour-specific Bhutani nomogram for infants \geq 35 weeks gestational age (GA).¹ Phototherapy has been used widely for over 60 years and has been associated with few adverse events in term infants. Phototherapy decreases or reduces the rate of rise of bilirubinemia in almost all cases, regardless of the cause.² It also reduces the risk that TSB will reach the level associated with increased risk of kernicterus and that at which exchange transfusion is recommended.

Some infants are more likely to be readmitted for treatment of hyperbilirubinemia after discharge from their birth hospitalization. Infants discharged in the first two days after birth were more likely to be readmitted for jaundice compared with infants who stayed longer than three days, an association that decreased with increasing GA.⁴ Other risk factors for hyperbilirubinemia include vaginal delivery, exclusively breastfeeding at discharge, primiparous mother, maternal age less than 20 years old, mother with an Asian country of birth, and higher TSB relative to the treatment threshold at phototherapy initiation.^{4,5}

Phototherapy works by using photons from light to alter bilirubin molecules in the superficial capillaries into water-soluble, non-neurotoxic molecules and reducing unconjugated TB levels.¹ Conventional phototherapy is delivered by a single light source. The preferred treatment is intensive phototherapy delivered by irradiance in the blue-green spectrum (wavelengths of approximately 460 to 490 nm) of at least 30 μ W/cm² per nm (measured at the infant's skin directly below the center of the phototherapy unit) and is delivered to as much of the infant's surface area as possible.^{1,6} Conventional phototherapy may be delivered in the hospital or in the home setting.⁷

Home phototherapy can be less disruptive to the family and is appropriate for otherwise healthy, term infants without hemolysis and other risk factors, who have TB levels 2 to 3 mg/dL below the recommended threshold level for initiation of hospital phototherapy, are feeding well, and can be closely followed.¹ Per the updated 2022 clinical practice guidelines from the American Academy of Pediatrics (AAP), home phototherapy is an option that can be started at a lower

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threshold, such as 2 mg/dL below the phototherapy threshold, to reduce the risk of hospital readmission.³ During phototherapy, infants should be placed on their backs and fully exposed to the light with the exception of a diaper. Their eyes should be shielded with an opaque blindfold with attention given to prevent the blindfold from covering the nose or sliding off the eyes.¹

American Academy of Pediatrics (AAP)

In 2022 the AAP published updated clinical practice guidelines that are meant to replace the 2004 clinical guidelines concerning the assessment and treatment of neonatal hyperbilirubinemia in infants ≥ 35 weeks.³ The 2022 AAP guidelines focus on recommendations for when infants should have a direct antiglobulin test (DAT) and blood type testing; implementation of care practices that promote evidence-based breastfeeding support that is family-centered; recommendation against providing the infant with water or dextrose water as an oral supplementation to prevent hyperbilirubinemia or to decrease bilirubin levels; importance of assessing for glucose-6-phosphate dehydrogenase (G6PD) deficiency; assessment for hyperbilirubinemia neurotoxicity risk factors; recommendations for when total serum bilirubin (TSB) or transcutaneous bilirubin (TcB) should be measured; recommendations for phototherapy treatment. The 2022 AAP guidelines address the issues of prevention, risk assessment, monitoring, and treatment of neonatal hyperbilirubinemia in infants ≥ 35 weeks.³

National Institute for Health and Care Excellence (NICE)

NICE guidelines cover diagnosing and treating jaundice in order to detect and prevent very high levels of bilirubin. They provide consensus-based thresholds for when phototherapy and exchange transfusion should be initiated by age in hours.⁸

United States Preventive Services Task Force (USPSTF)

The USPSTF stated there was insufficient evidence to make recommendations regarding screening for hyperbilirubinemia for infants ≥ 35 weeks. They note that risk factors for hyperbilirubinemia include family history of neonatal jaundice, exclusive breastfeeding, bruising, cephalohematoma, ethnicity (Asian or black), maternal age older than 25 years, male sex, glucose-6-phosphate dehydrogenase deficiency, and gestational age less than 38 weeks. The specific contribution of these risk factors to chronic bilirubin encephalopathy in healthy children is not well understood. Currently, the USPSTF notes this recommendation is “inactive.”⁹

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2022, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

CPT® Codes	Description
N/A	

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HCPCS Codes	Description
E0202	Phototherapy (bilirubin) light with photometer
S9098	Home visit, phototherapy services (e.g., Bili-lite), including equipment rental, nursing services, blood draw, supplies, and other services, per diem

Reviews, Revisions, and Approvals	Revision Date	Approval Date
New policy	12/17	12/17
References reviewed and updated. Specialist review.	10/19	10/19
Added criterion that “if the mother is breastfeeding, she has been offered lactation support from a qualified professional.” References reviewed and updated. Specialist review. Replaced “member” with “member/enrollee in all instances.	10/20	10/20
Annual review. Clarified in section III. that the statement applies when not meeting criteria for home phototherapy in this policy. References reviewed and updated. Background updated with no clinical significance. Changed “review date” in the header to “date of last revision” and “date” in the revision log header to “revision date.”	10/21	10/21
Annual review. Changed title from “Home phototherapy...” to “Phototherapy...” Updated criteria I.D. from 24 to 48 hours to 12 to 24 hours. Updated criteria to include the following: I.E. ≥48 hours old; I.F. An LED-based phototherapy device will be available in the home without delay; I.G. No previous phototherapy; I.H. TSB will be measured daily. Criteria I.I. #1 updated to include example of positive direct antiglobulin test for isoimmune hemolytic disease and to include glucose-6-phosphate dehydrogenase (G6PD) and other hemolytic disease. Criteria I.I. #2 updated to include hypoxic ischemia encephalopathy (HIE). Significant lethargy removed from Criteria I.I. Criteria I.I. updated to include the following: #13 Significant clinical instability in the previous 24 hours; #14 Clinical history of a parent or sibling requiring phototherapy or exchange transfusion; #15 Exclusive breastfeeding with suboptimal intake (≥10% weight loss); #16 Down syndrome; #17 Macrosomic infant of a diabetic mother. Added note below Table 1 that explains the values are conservative TSB values based on lower age range thresholds in inpatient criteria. Added clarification to II that extenuating circumstances can include lack of expected compliance with therapy at home. Added note below policy statement II stating: that infants should be admitted for inpatient phototherapy if the TSB concentration is more than 1 mg/dL above the AAP guidelines phototherapy treatment threshold per the bili risk tool, and that table 1 is consistent with AAP guidelines allowing treatment at lower levels per provider discretion; and that clinical decision support tools provider further criteria for inpatient phototherapy	10/22	10/22

Reviews, Revisions, and Approvals	Revision Date	Approval Date
treatment. Updated background to include 2022 AAP clinical practice guidelines. Removed ICD-10 codes. References reviewed and updated. Reviewed by internal specialist and external specialist.		
Annual review. Reworded criteria I.C. for inclusive language. References reviewed and updated.	10/23	

References

1. Wong RJ, Bhutani VK. Unconjugated hyperbilirubinemia in term and late preterm newborns: Initial management. UpToDate. www.uptodate.com. Updated April 17, 2023. Accessed August 25, 2023.
2. Morris BH, Oh W, Tyson JE, et al. Aggressive vs. conservative phototherapy for infants with extremely low birth weight. *New Engl J Med*. 2008;359(18):1885 to 1896. doi: 10.1056/NEJMoa0803024
3. Kemper AR, Newman TB, Slaughter JL, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. *Pediatrics*. 2022;150(3):e2022058859. doi:10.1542/peds.2022-058859
4. Lain SJ, Roberts CL, Bowen JR, Nassar N. Early discharge of infants and risk of readmission for jaundice. *Pediatrics*. 2015;135(2):314 to 321. doi:10.1542/peds.2014-2388
5. Chang PW, Waite WM. Evaluation of Home Phototherapy for Neonatal Hyperbilirubinemia. *J Pediatr*. 2020;220:80 to 85. doi:10.1016/j.jpeds.2020.01.004
6. Kumar P, Chawla D, Deorari A. Light-emitting diode phototherapy for unconjugated hyperbilirubinaemia in neonates. *Cochrane Database Syst Rev*. 2011;2011(12):CD007969. Published 2011 Dec 7. doi:10.1002/14651858.CD007969.pub2
7. Snook J. Is home phototherapy in the term neonate with physiological jaundice a feasible practice? A systematic literature review. *J Neonatal Nurs*. 2017;23(1):28 to 39.
8. Jaundice in newborn babies under 28 days: Clinical guideline CG98. National Institute for Health and Care Excellence. <https://www.nice.org.uk/guidance/cg98>. Published May 19, 2010 (updated October 26, 2016). Accessed August 25, 2023.
9. US Preventive Services Task Force. Screening of infants for hyperbilirubinemia to prevent chronic bilirubin encephalopathy: US Preventive Services Task Force recommendation statement. *Pediatrics*. 2009;124(4):1172 to 1177. doi:10.1542/peds.2009-0128
10. Maisels MJ, Bhutani VK, Bogen D, Newman TB, Stark AR, Watchko JF. Hyperbilirubinemia in the newborn infant > or =35 weeks' gestation: an update with clarifications. *Pediatrics*. 2009;124(4):1193 to 1198. doi:10.1542/peds.2009-0329
11. Maisels MJ, Watchko JF, Bhutani VK, Stevenson DK. An approach to the management of hyperbilirubinemia in the preterm infant less than 35 weeks of gestation. *J Perinatol*. 2012;32(9):660 to 664. doi:10.1038/jp.2012.71
12. Bhutani VK, Wong RJ. Unconjugated hyperbilirubinemia in preterm infants <35 weeks gestation. UpToDate. www.uptodate.com. Updated September 22, 2022. Accessed September 20, 2023.
13. Johnson L, Bhutani VK, Karp K, Sivieri EM, Shapiro SM. Clinical report from the pilot USA Kernicterus Registry (1992 to 2004). *J Perinatol*. 2009;29 Suppl 1:S25 to S45. doi:10.1038/jp.2008.211

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14. American Academy of Pediatrics and American College of Obstetrics and Gynecology. *Guidelines for Perinatal Care*: 8th Edition. Elk Grove Village, IL. 2012.
15. Chu L, Qiao J, Xu C. Home-Based Phototherapy Versus Hospital-Based Phototherapy for Treatment of Neonatal Hyperbilirubinemia: A Systematic Review and Meta-Analysis. *Clin Pediatr (Phila)*. 2020;59(6):588 to 595. doi:10.1177/0009922820916894
- utani VK. Unconjugated hyperbilirubinemia in term and late preterm infants: Initial management. UpToDate. www.uptodate.com. Updated April 17, 2023. Accessed September 15, 2023.
16. Pettersson M, Eriksson M, Albinsson E, Ohlin A. Home phototherapy for hyperbilirubinemia in term neonates-an unblinded multicentre randomized controlled trial. *Eur J Pediatr*. 2021;180(5):1603 to 1610. doi:10.1007/s00431-021-03932-4

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan’s affiliates, as applicable.

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This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members/enrollees. This clinical policy is not intended

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to recommend treatment for members/enrollees. Members/enrollees should consult with their treating physician in connection with diagnosis and treatment decisions.

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Note: For Medicaid members/enrollees, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

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