Management of Hyperbilirubinemia in Infants ≥ 35 Weeks Gestation Outside the Newborn Nursery

Clinical Practice Guideline

Approved by SSM Health Cardinal Glennon Clinical Practice Guideline Committee July 27, 2023

Evaluation and Treatment of Hyperbilirubinemia in Infants ≥ 35 Weeks Gestation in the Non-Nursery Setting Clinical Practice Guideline

Box 1: Abbreviations Index
TSB - Total Serum Bilirubin
TCB - Transcutaneous Bilirubin
ROR - Rate of Rise
DAT - Direct Antiglobulin Test

Inclusion Criteria
- **Infants ≥ 35 Weeks Gestation**
- **≤ 14 days of age**
- **Well-appearing**

TCB/TSB within 3mg/dL of phototherapy threshold? (*See Appendix 1, figures 1-4*)

YES

1. Obtain TSB (if screening was TCB)
2. Obtain Infant Blood type and DAT if unknown and any of the following are present:
- Maternal Blood type O
- Maternal Rh(D) negative
- Rapid ROR (*see Box 2*)

TSB ≥ phototherapy threshold? (*See Appendix 1, figures 1-4*)

NO

Phototherapy Initiation is NOT recommended for bilirubin levels below phototherapy threshold

Discharge, follow up timing based on mg/dL below phototherapy threshold (*see Appendix 1, Table 2*)

YES

TSB ≥ escalation of care threshold? (2mg/dL below exchange transfusion threshold, *see Appendix 1 figures 5-8*)

NO

Initiate Phototherapy, follow Phototherapy Management Clinical Practice Guideline

YES

Consult NICU, begin escalation of care

Box 2: Rate of Rise
- Rapid ROR: ≥ 0.3mg/dL/hr hours 0-24 after birth, ≥ 0.2mg/dL/hr beyond 24 hours

SSMHealth Cardinal Glennon Access Center Transfer Line
888-229-2424

1. SSMHealth Cardinal Glennon CPG Home

2. Resources
a. Kemper AR et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. Pediatrics. 2022; 150(3): e2022058859.
b. Widmer K. Evaluation and Management of Neonatal Jaundice. Internal Department Specific Resource, Children's Hospital Colorado: unpublished. 2022.
c. American Academy of Pediatrics Value in Inpatient Pediatrics (VIP) and Pediatric Acute Care Network. Learning and Implementing Guidelines for Hyperbilirubinemia Treatment. 2022.

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Approved by SSM Cardinal Glennon Clinical Practice Guidelines Committee July 27, 2023
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Appendix 1

Evaluation and Management of Hyperbilirubinemia and Management of Phototherapy in Infants ≥ 35 Weeks Gestation

Clinical Practice Guideline, SSM Cardinal Glennon Children's Hospital

Neurotoxicity Risk Factors

Table 1:

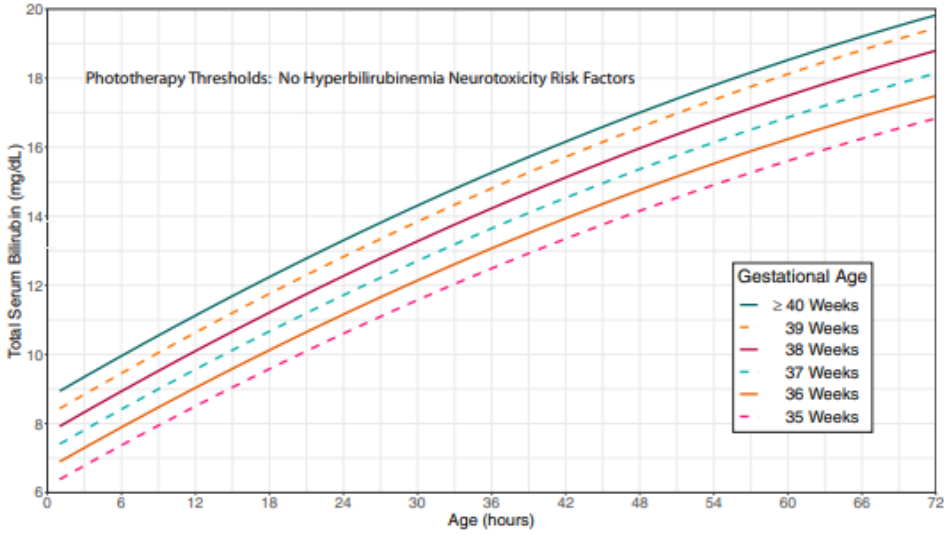
Hyperbilirubinemia Neurotoxicity Risk Factors

Risk Factors
• Gestational age <38 wk and this risk increases with the degree of prematurity[a]
• Albumin <3.0 g/dL
• Isoimmune hemolytic disease (ie, positive direct antiglobulin test), G6PD deficiency, or other hemolytic conditions
• Sepsis
• Significant clinical instability in the previous 24 h

Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

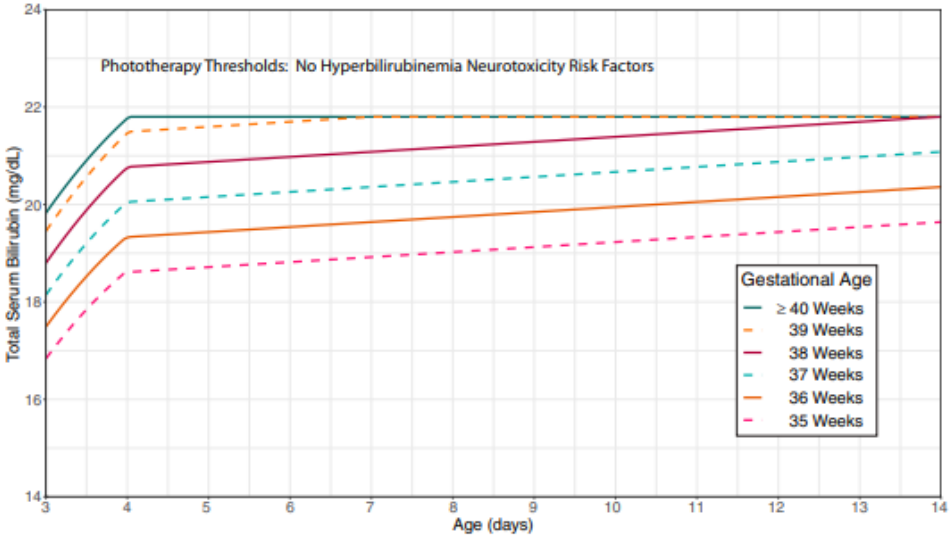
Phototherapy Thresholds:

Figure 1: 0 to 72 Hours of Life, No Neurotoxicity Risk Factors (see Table 1 above)



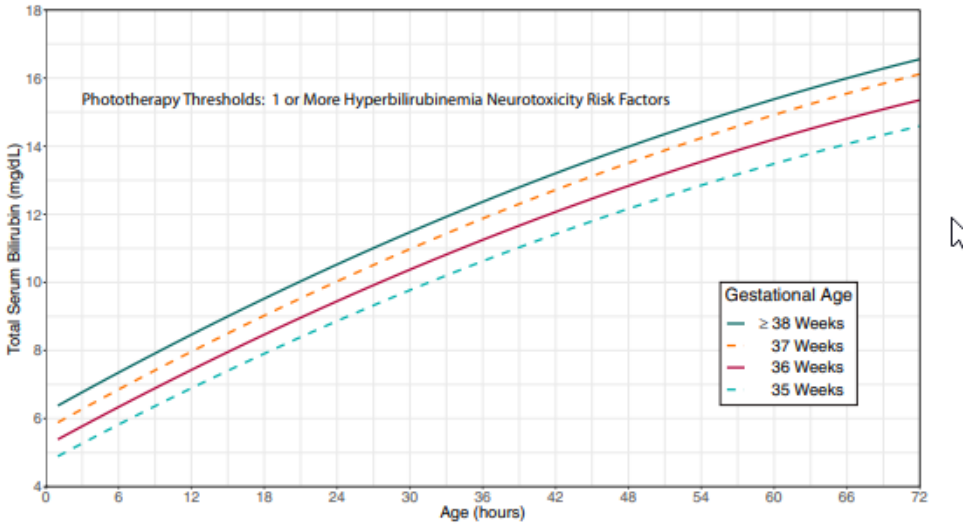
Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Figure 2: 3 to 14 Days of Life, No Neurotoxicity Risk Factors (see Table 1 above)



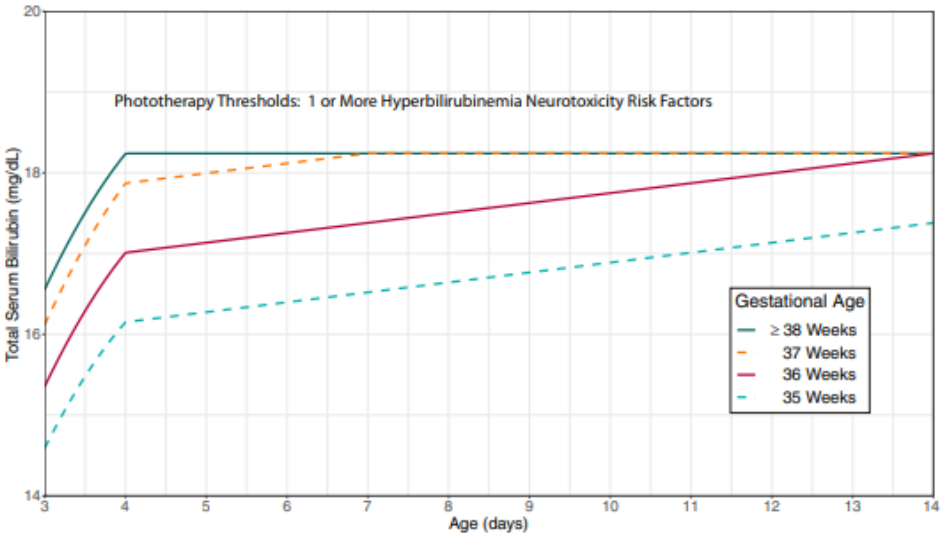
Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Figure 3: 0 to 72 Hours of Life with One or More Neurotoxicity Risk Factors (see Table 1 above)



Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

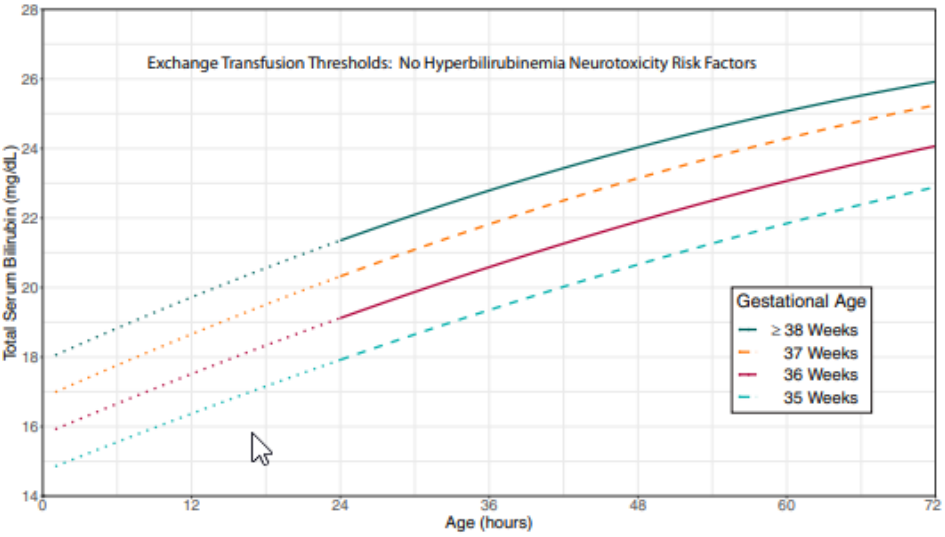
Figure 4: 3 to 14 Days of Life with One or More Neurotoxicity Risk Factors (see Table 1 above)



Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

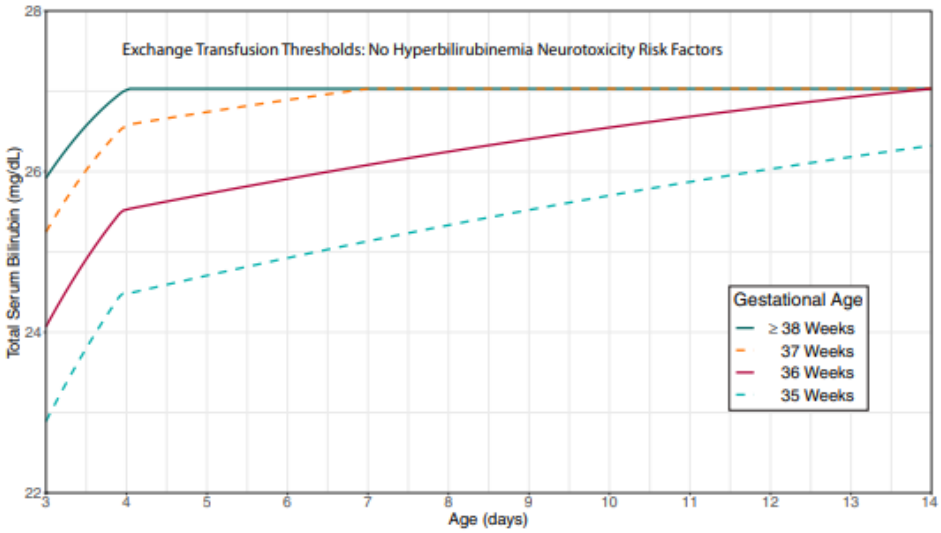
Exchange Transfusion Thresholds:

Figure 5: 0 to 72 Hours of Life, No Neurotoxicity Risk Factors (see Table 1 above)



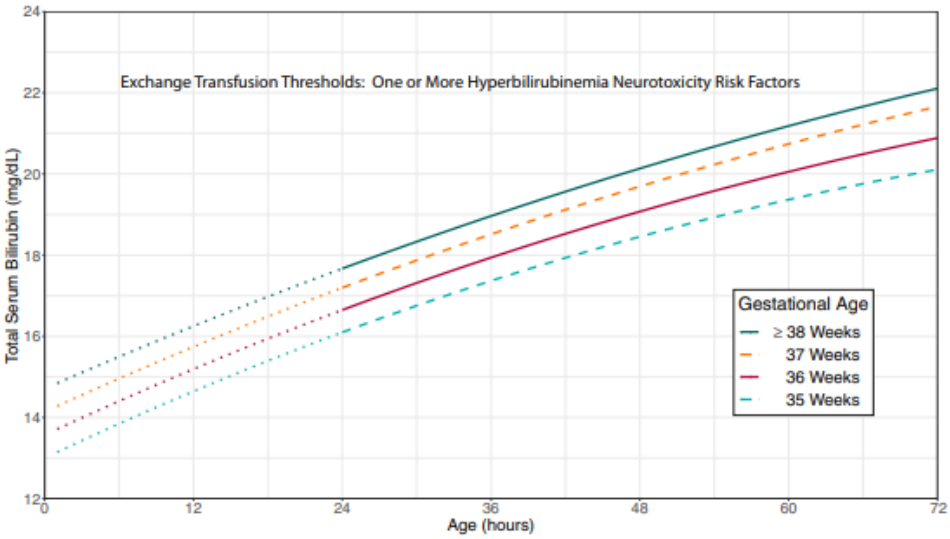
Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Figure 6: 3 to 14 Days of Life, No Neurotoxicity Risk Factors (see Table 1 above)



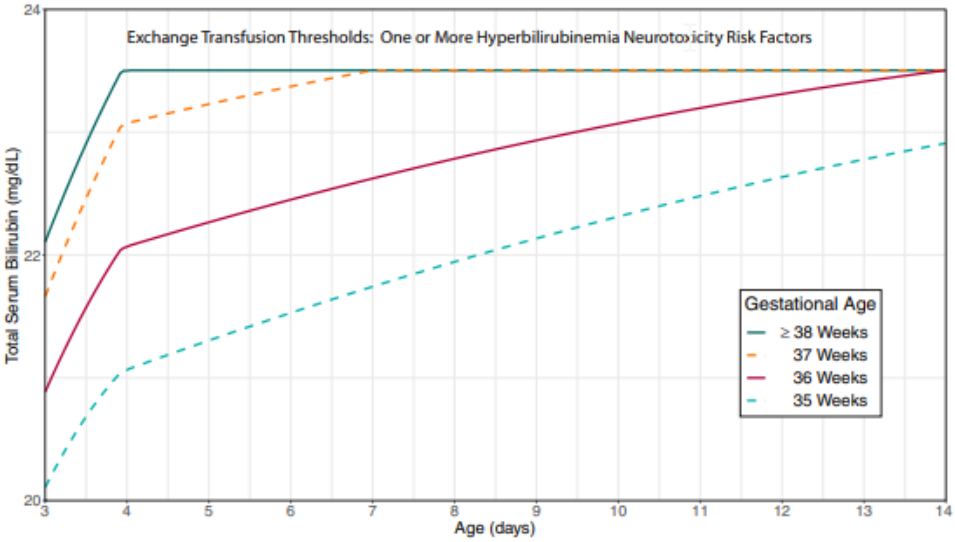
Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Figure 7: 0 to 72 Hours of Life with One or More Neurotoxicity Risk Factors (see Table 1 above)



Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Figure 8: 3 to 14 Days of Life with One or More Neurotoxicity Risk Factors (see Table 1 above)



Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

Follow-Up Timing Recommendations:

Table 2:

Phototherapy threshold minus TcB or TSB		Discharge Recommendations
0.1-1.9 mg/dL	Age <24 hours	Delay discharge, consider phototherapy, measure TSB in 4 to 8 hours
	Age≥24 hours	Measure TSB in 4 to 24 hours[a] Options: • Delay discharge and consider phototherapy • Discharge with home phototherapy if all considerations in the guideline are met • Discharge without phototherapy but with close follow-up
2.0-3.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 4 to 24 hours[a]
3.5-5.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 1-2 days
5.5-6.9 mg/dL	Discharging <72 hours	Follow-up within 2 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥72 hours	Clinical judgment[b]
≥7.0 mg/dL	Discharging <72 hours	Follow-up within 3 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥72 hours	Clinical judgment[b]

Courtesy: Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks Gestation. *Pediatrics*. 2022; 150(3):e2022058859.

LIGHT Algorithm for Breastfeeding Infants ≤5 Days Old with Hyperbilirubinemia

Feeding Assessment Should Include:

- Risk factors for delayed lactogenesis
- Lactation History
- Maternal breast shape, breast changes
- LATCH scores
- Latch depth
- Feeding frequency
- Infant transfer at the breast

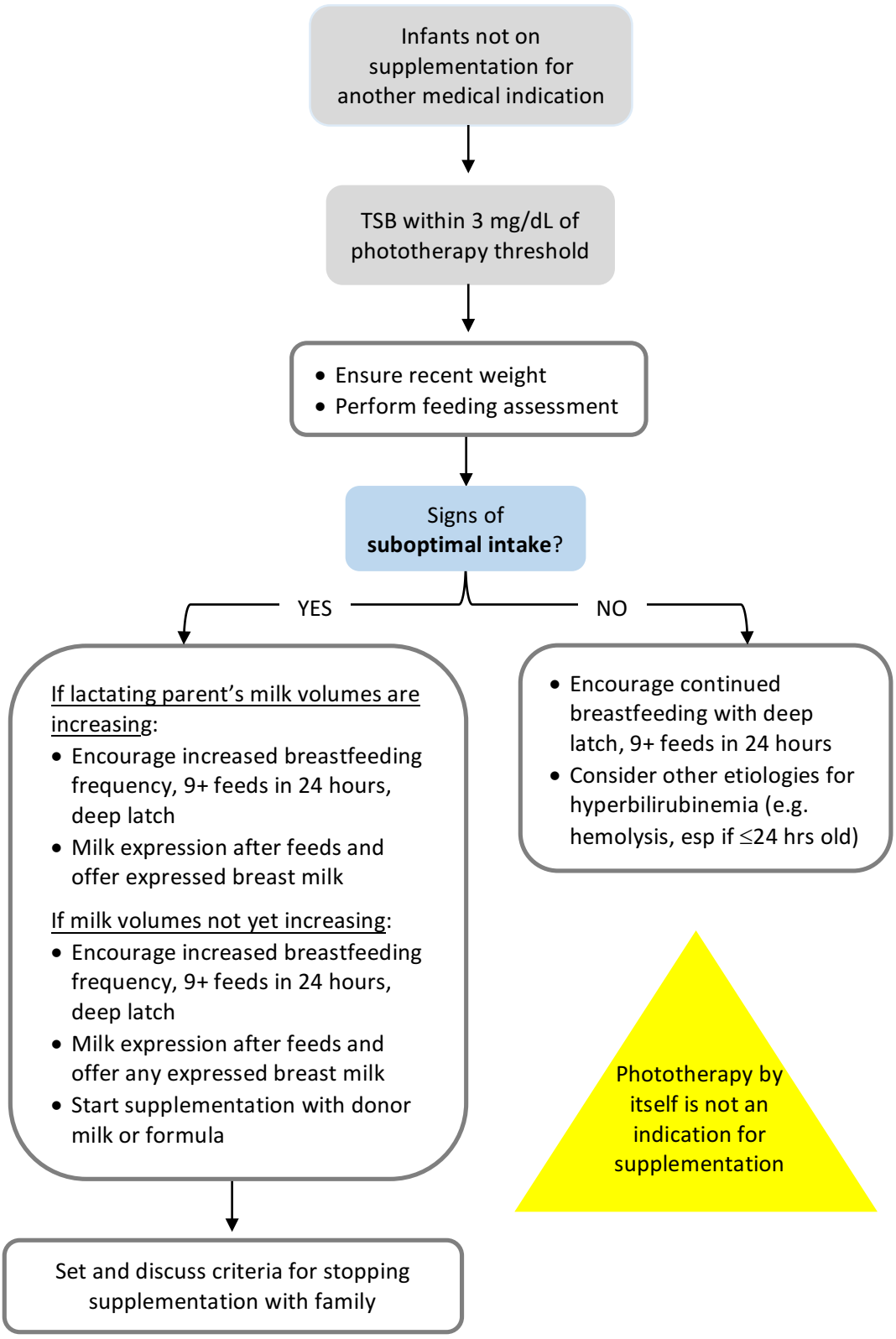
Signs of Suboptimal Intake May Include:

- Ineffective latch and/or suck
- Sleepy and difficult to wake for feedings
- Delayed colostrum or milk supply
- Weight loss >75th %ile on NEWT, esp. after first 24 hrs (https://newbornweight.org)
- Laboratory abnormalities (e.g. hypoglycemia)
- Ineffective milk transfer
- Uric acid crystals in urine
- <4 stools on day 4 or meconium stools on day 5

Suggested supplementation volumes by ABM[1,2]

Time (hrs)	mL/feed*
0-24	2-10
24-48	5-15
48-72	15-30
72-96	30-60

*with expressed breast milk, donor breast milk (if available), or formula



[1] Kellams A, Harrel C, Omage S, Gregory C, Rosen-Carole C. ABM clinical protocol #3: supplementary feedings in the healthy term breastfed neonate, revised 2017. *Breastfeed Med*. 2017;12:188-198. doi:10.1089/bfm.2017.29038.ajk

[2] Flaherman VJ, Maisels MJ; Academy of Breastfeeding Medicine. ABM clinical protocol #22: guidelines for management of jaundice in the breastfeeding infant 35 weeks or more of gestation—revised. *Breastfeed Med*. 2017;12(5): 250–257

Algorithm developed with assistance from E. Hayes Bakken, MD, IBCLC, FAAP and Julie Gallois, MD, FAAP