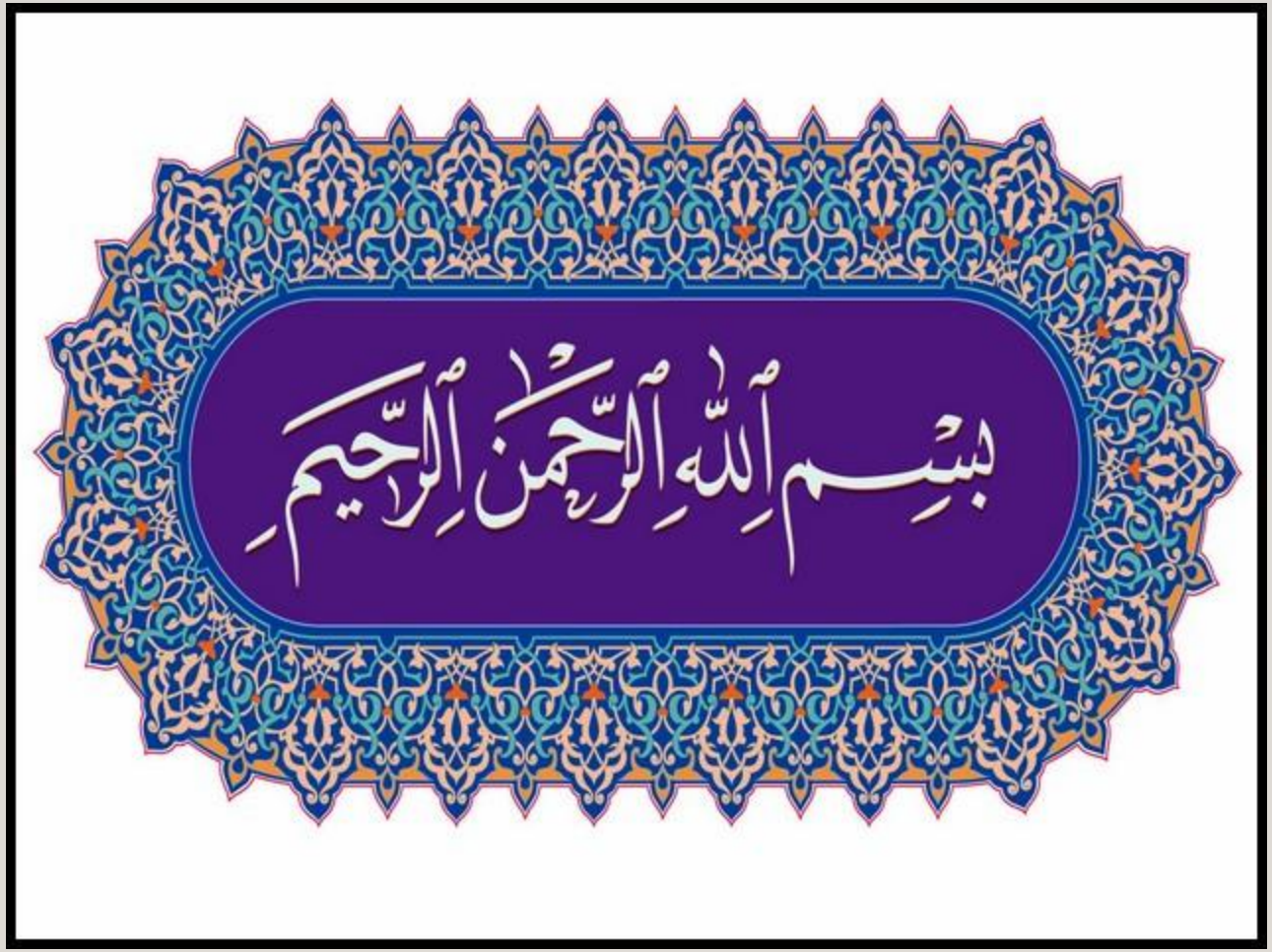

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

غربالگری زردی در نوزادان

JAUNDICE SCREENING IN NEWBORNS

- Dr. kh.Najib
- Neonatologist
- Associate professor of SUMS

CASE 1

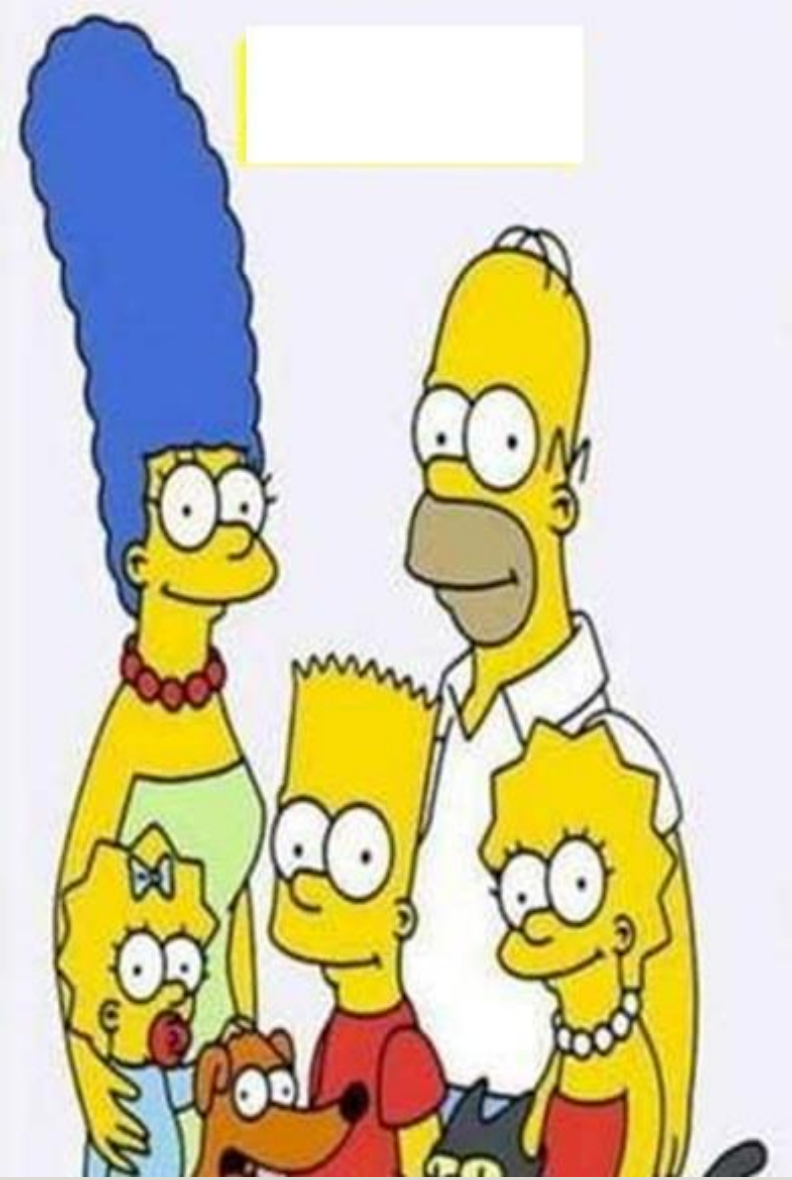
نوزادی ترم (سی و نه هفته)با وزن تولد ۳۱۰۰ در۱۶ ساعت اول تولد بیلی روبین ۸ دارد. .حال عمومی خوب و در معاینه نرمال است.چه اقدامی انجام می دهید؟

الف-بدون ریسک فاکتور نوروتوکسیک

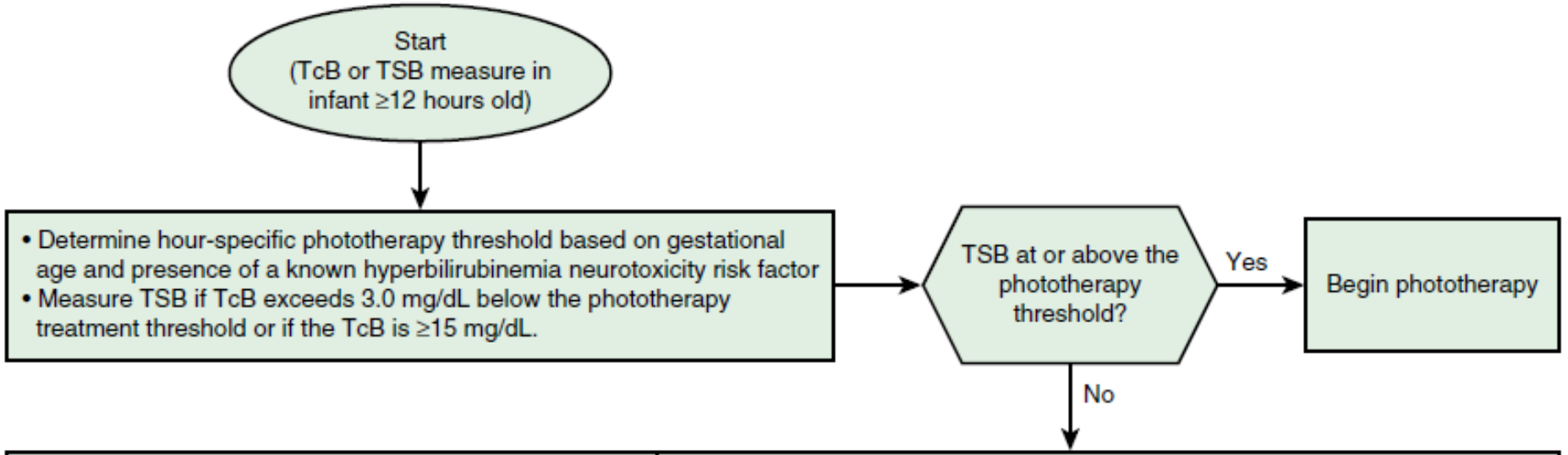
ب - با ریسک فاکتور نورو توکسیک

CASE 2

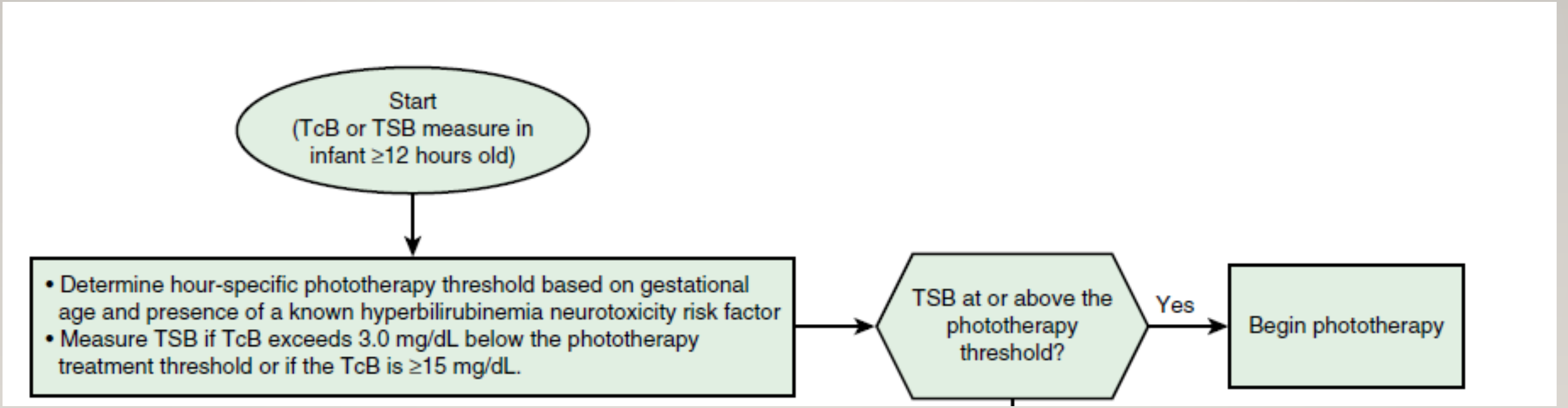
نوزادی در ۳۰ ساعت بعد از تولد هنگام ترخیص از بیمارستان بیلی روبین ۸ دارد که تا آستانه شروع فوتو بر اساس منحنی مربوطه ۵ واحد کمتر است . توصیه شما برای پیگیری چیست؟

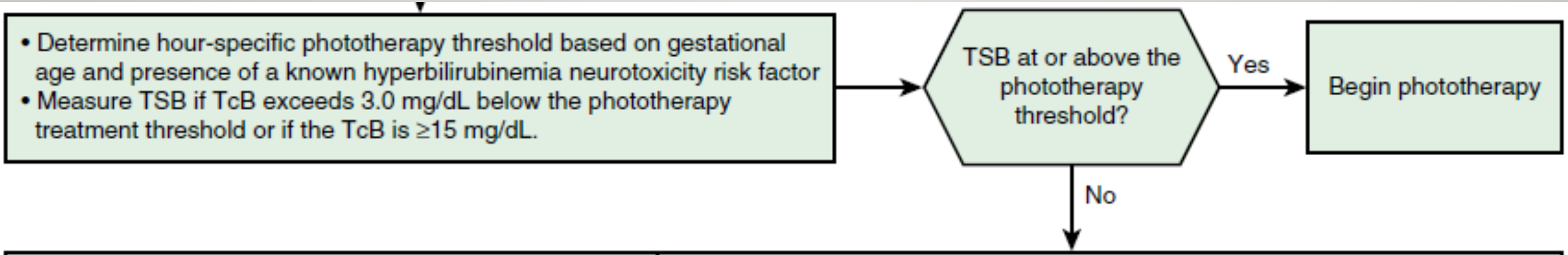


SCREENING



Phototherapy threshold minus TcB or TSDB		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]


Start
(TcB or TSB measure in infant ≥12 hours old)
• Determine hour-specific phototherapy threshold based on gestational age and presence of a known hyperbilirubinemia neurotoxicity risk factor
• Measure TSB if TcB exceeds 3.0 mg/dL below the phototherapy treatment threshold or if the TcB is ≥15 mg/dL.
TSB at or above the phototherapy threshold?
Yes
Begin phototherapy



Phototherapy threshold minus TcB or TSDB		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]

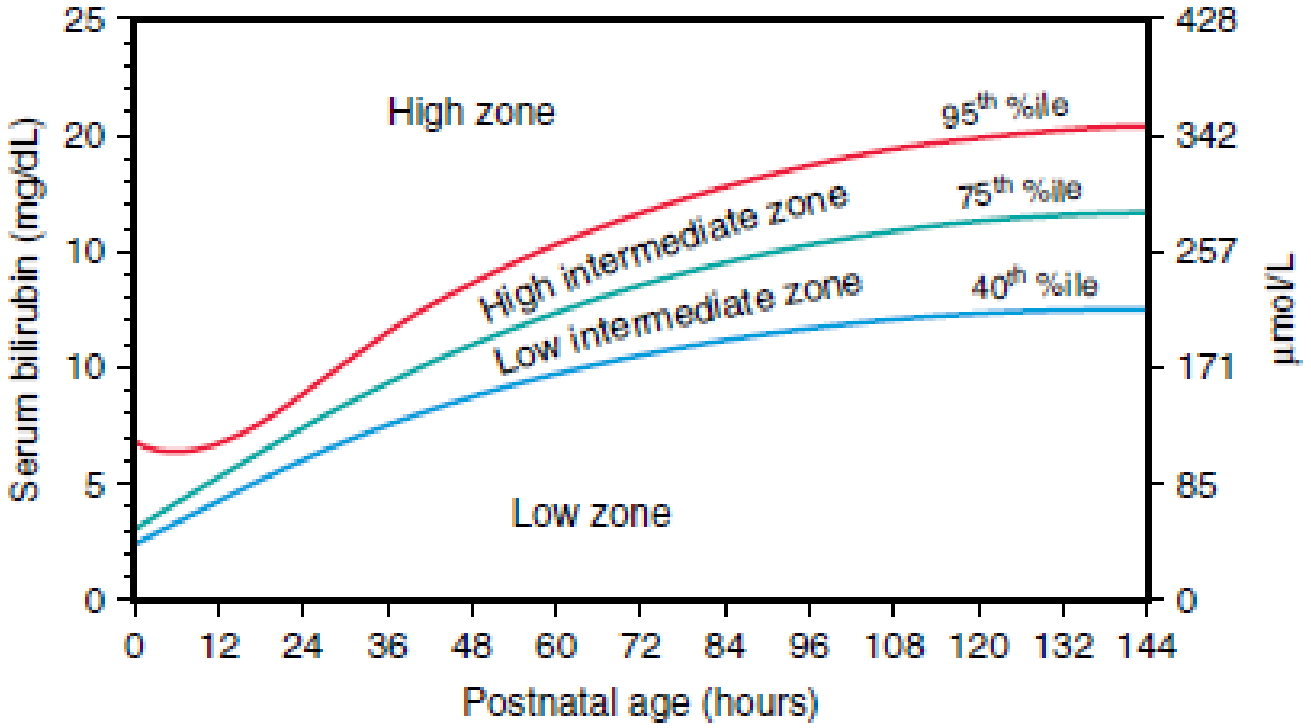
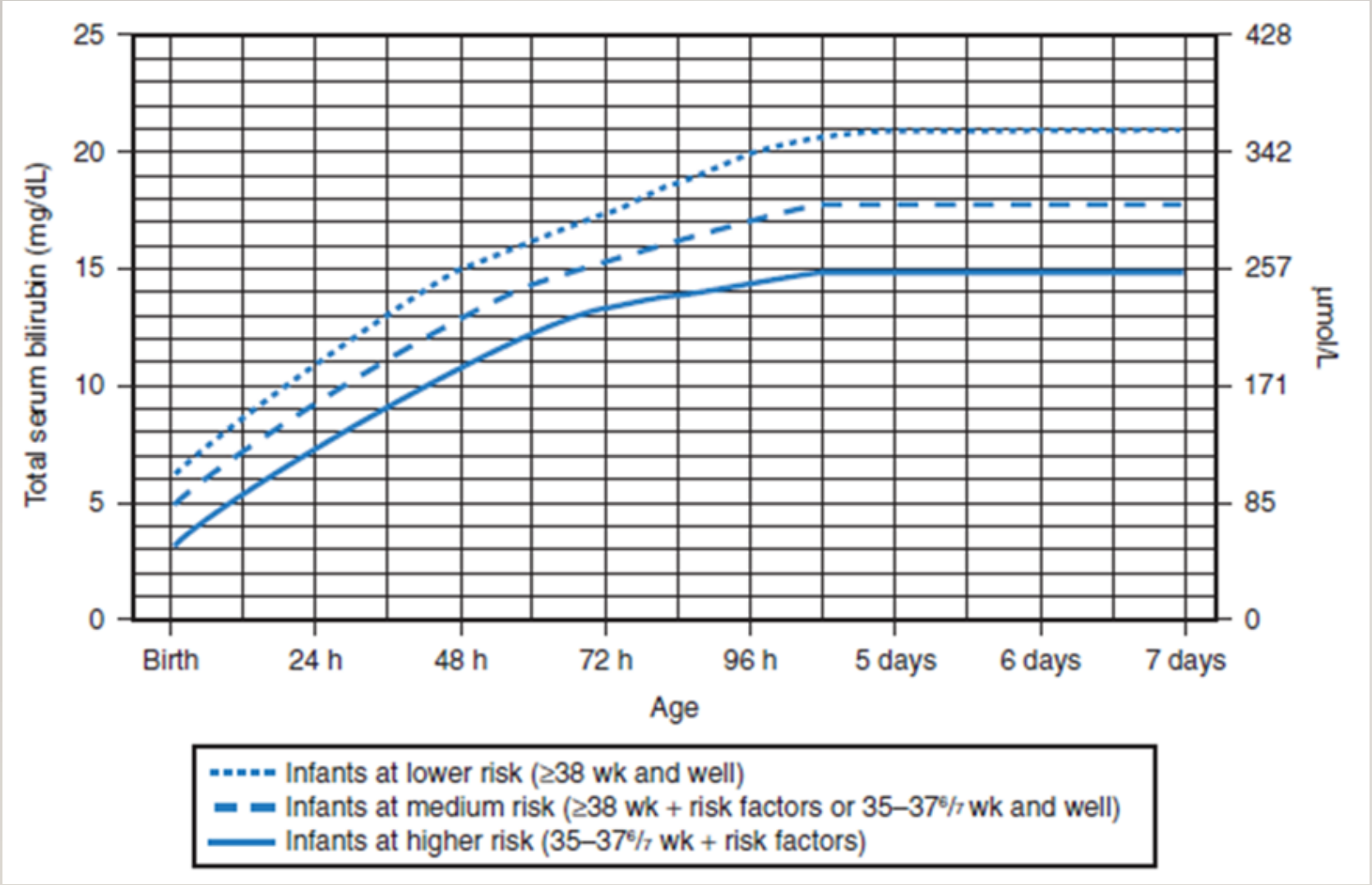


Fig. 137.3 Neonatal bilirubin nomogram. Percentile designation of well newborns ≥35 weeks' gestational age based on their hour-specific serum bilirubin values. The high zone is subdivided by the 95th percentile track. The intermediate zone is subdivided into upper and lower zones by the 75th percentile track. The low zone has been electively and statistically defined by the 40th percentile track. *(Modified from Bahr TM, Henry E, Christensen RD, et al. A new hour-specific serum bilirubin nomogram for neonates ≥35 weeks of gestation. J Pediatr. 2021;236:28–33. Fig. 2.)*


Total serum bilirubin (mg/dL)
25
20
15
10
5
0
428
342
257
171
85
0
μmol/L
Birth
24 h
48 h
72 h
96 h
5 days
6 days
7 days
Age
Infants at lower risk (≥38 wk and well)
Infants at medium risk (≥38 wk + risk factors or 35–37⁶/₇ wk and well)
Infants at higher risk (35–37⁶/₇ wk + risk factors)

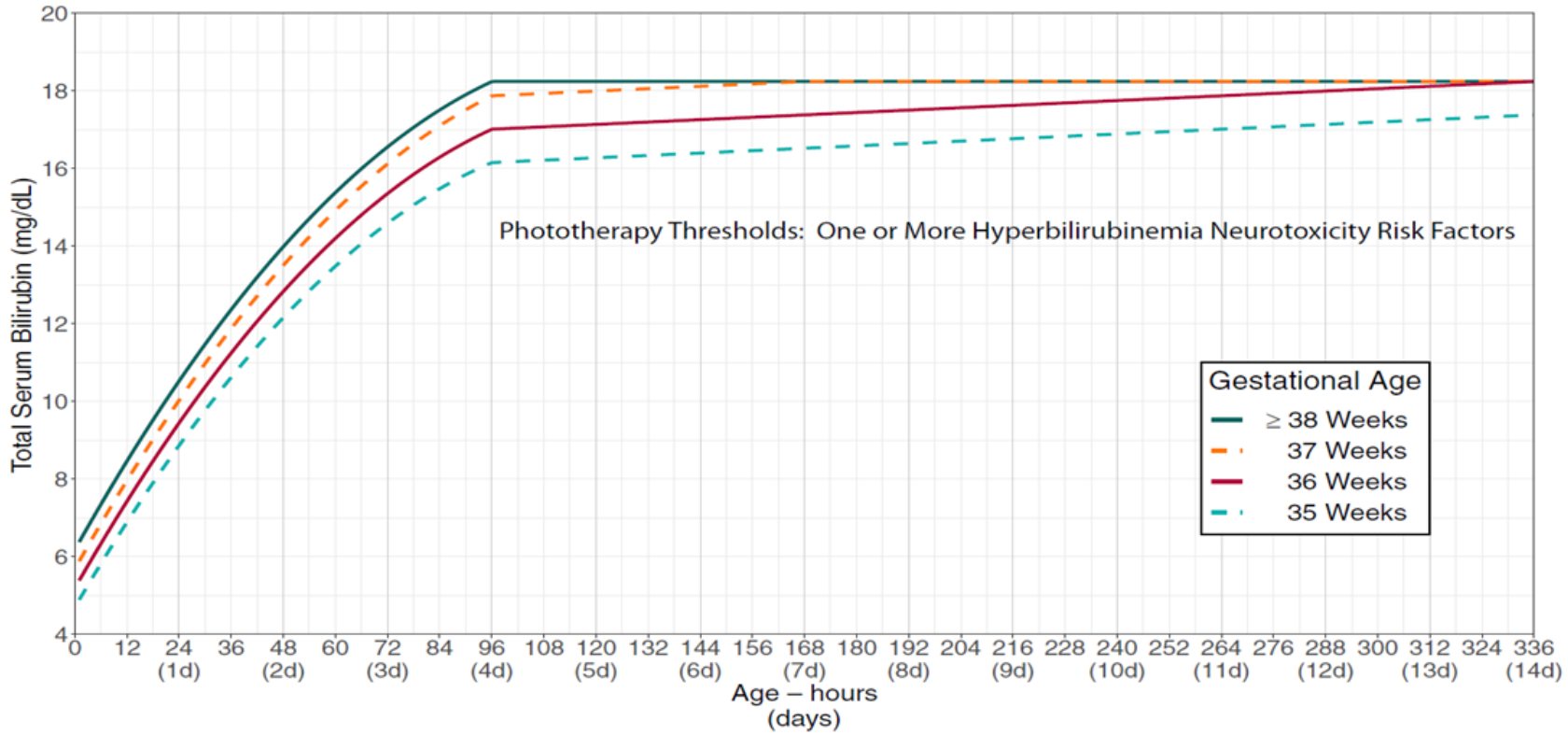
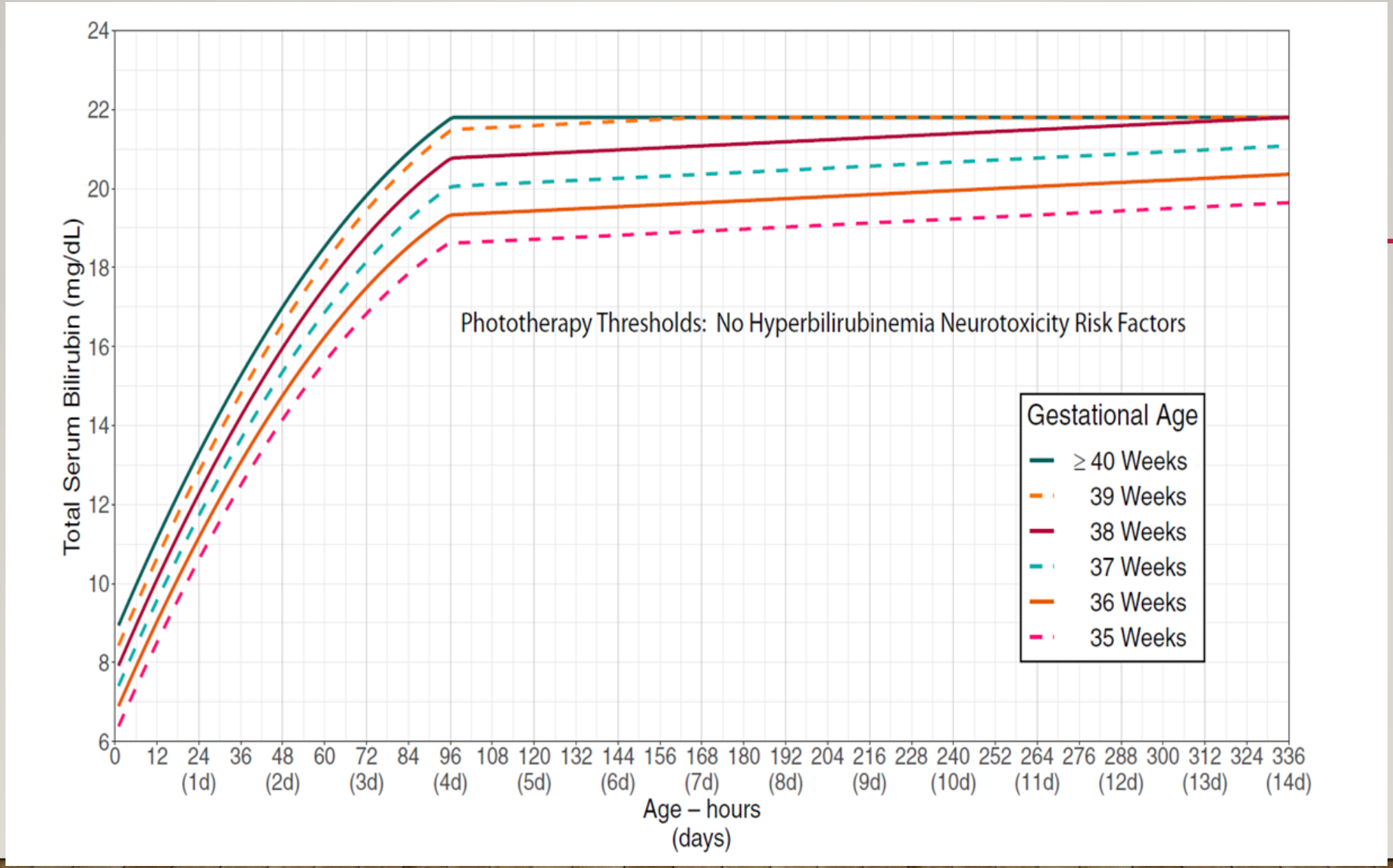


FIGURE 3

Phototherapy thresholds by gestational age and age in hours for infants with any recognized hyperbilirubinemia neurotoxicity risk factors other than gestational age. These thresholds are based on expert opinion rather than strong evidence on when the potential benefits of phototherapy exceed its potential harms. Use total serum bilirubin concentrations; do not subtract the direct-reacting or conjugated bilirubin from the total serum bilirubin. In rare cases of severe hyperbilirubinemia in which the direct-reacting or conjugated bilirubin exceeds 50% of the TSB, consult an expert. Hyperbilirubinemia neurotoxicity risk factors include gestational age <38 weeks; albumin <3.0 g/dL; isoimmune hemolytic disease, glucose-6-phosphate dehydrogenase (G6PD) deficiency, or other hemolytic conditions; sepsis; or any significant clinical instability in the previous 24 hours. See Supplemental Fig 2.


Phototherapy Thresholds: No Hyperbilirubinemia Neurotoxicity Risk Factors
Total Serum Bilirubin (mg/dL)
24
22
20
18
16
14
12
10
8
6
Gestational Age
≥ 40 Weeks
39 Weeks
38 Weeks
37 Weeks
36 Weeks
35 Weeks
0 12 24 (1d) 36 48 (2d) 60 72 (3d) 84 96 (4d) 108 120 (5d) 132 144 (6d) 156 168 (7d) 180 192 (8d) 204 216 (9d) 228 240 (10d) 252 264 (11d) 276 288 (12d) 300 312 (13d) 324 336 (14d)
Age – hours
(days)

Home phototherapy

HOME PHOTOTHERAPY

- Home phototherapy is less disruptive to the family and is an optionfor discharged newborns with TSB levels near the **TSB** threshold for phototherapy (ie, <2 mg/dL below to ≤1 mg/dL above the threshold)

- We use home phototherapy only if **all** of the following conditions are met:

HOME PHOTOTHERAPY

- Gestational age ≥38 weeks
- ≥48 hours postnatal age
- Clinically well with adequate feeding
- No known hyperbilirubinemia neurotoxicity risk factors
- No previous phototherapy
- TSB ≤1 mg/dL above the phototherapy treatment threshold
- An LED-based phototherapy device can be available in the home immediately
- TSB can be measured daily

HOME PHOTOTHERAPY

- Newborns receiving home phototherapy should have TSB levels checked daily. If the TSB increases or is >1mg/dL above phototherapy threshold, the infant should be admitted for inpatient phototherapy.

- Home phototherapy should **not** be used in newborns with any clinical risk factors for severe or progressive hyperbilirubinemia, especially hemolytic disease. Its efficacy and safety in this setting remain unproven

Thanks for your attention