

## SUPPLEMENTAL FIGURES

<b>Supplemental Figure#</b>	<b>Page</b>
<u>Part 1: Development of the chronologic age-based format</u>	
S.1 Threshold Line Logic .....	2
S.2 Integration of AAP and MWBS guidelines .....	3
S.3a Comparison of PBR and the chronologic age-based format for a 25 0/7 week CGA infant .....	4
S.3b Comparison of PBR and the chronologic age-based format for a 30 3/7 week CGA infant .....	5
S.4 Sample clinical data .....	6
<u>Part 2: Comparisons of international and institutional guidelines</u>	
S.5a 24 week phototherapy guidelines .....	7
S.5b 34 week phototherapy guidelines .....	8
S.6a Phototherapy guidelines at 96 hours of age .....	9
S.6b Exchange guidelines at 96 hours of age .....	10

## Supplemental Figure 1 – Threshold Line Logic

Y =

If  $X \leq \text{MAX}_{35}$  then  $(Q1 * X^2) + (Q2 * X) + (Q3)$ , else

If  $X \leq \text{MAX}_1$  then  $(A1 * X) + (A2)$ , else

If  $X \leq \text{MAX}_2$  then  $(B1 * X) + (B2)$ , else

If  $X \leq \text{MAX}_3$  then  $(C1 * X) + (C2)$

Where:

X = hours of age

Y = threshold bilirubin level

MAX<sub>35</sub> = maximum hours of age at which the threshold for high-risk 35-week GA infants is less than the corresponding MWBS threshold

MAX<sub>1</sub> = end of line segment A in Figure 1 (hours of age)

MAX<sub>2</sub> = end of line segment B in Figure 1 (hours of age)

MAX<sub>3</sub> = end of line segment C in Figure 1 (hours of age)

Q1, Q2, Q3 = Quadratic equation coefficients for the thresholds of 35-week GA high-risk infants from 0-96 hours of age

A1, A2 = Slope and intercept coefficients for Line Segment A in Figure 1b

B1, B2 = Slope and intercept coefficients for Line Segment B in Figure 1b

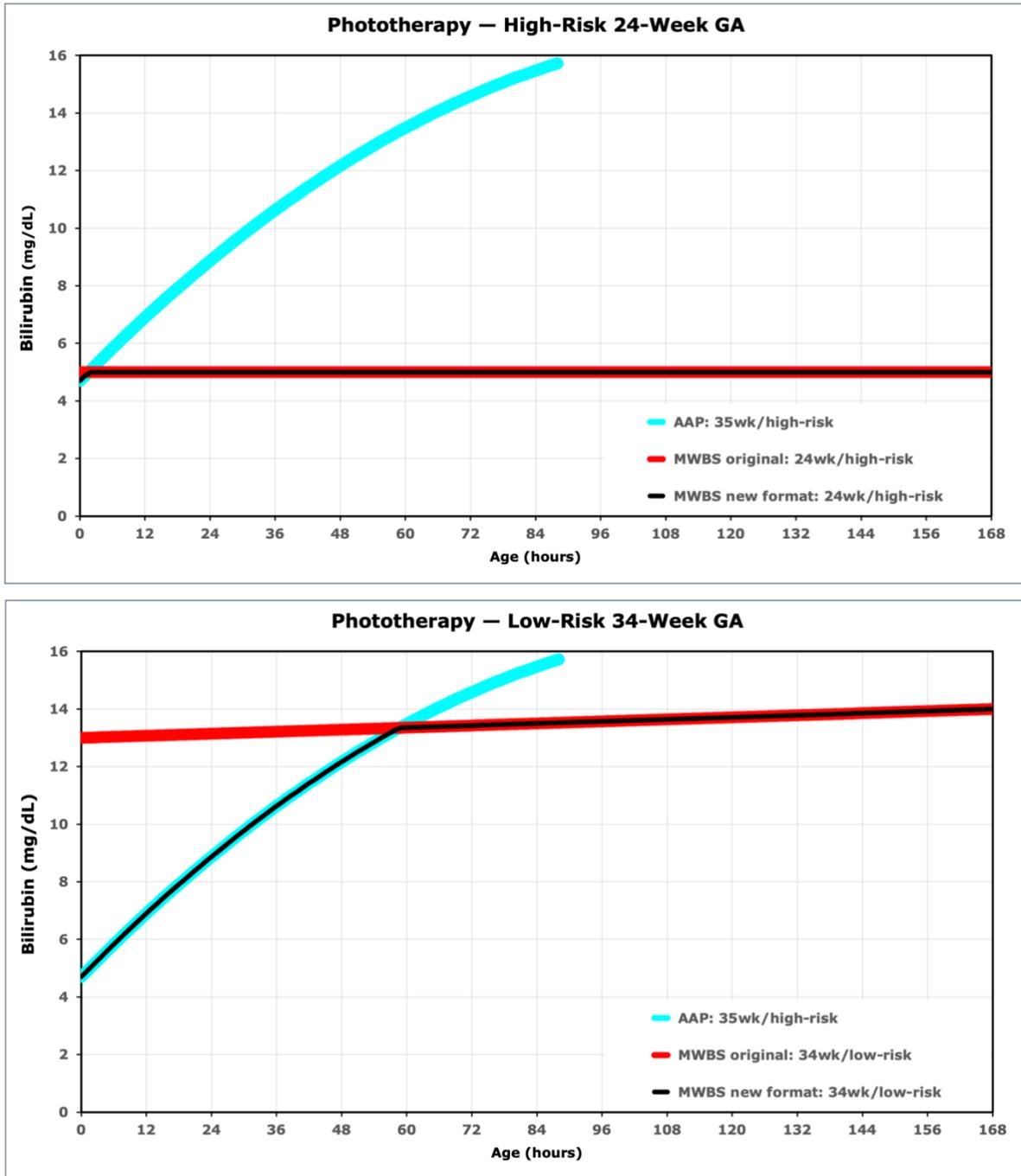
C1, C2 = Slope and intercept coefficients for Line Segment C in Figure 1b

**Supplemental Figure 1:** Complete threshold lines are created by plotting the threshold values (Y) calculated for each hour (X) beginning at the time of birth according to the stepwise logic in this figure. The threshold lines extend to 35 weeks' GA for infants  $\leq 33\ 0/7$  weeks' GA and to 14 days of age for infants  $\geq 33\ 1/7$  weeks GA based on a linear extrapolation of the final line segments.

As shown in Figure 1b:

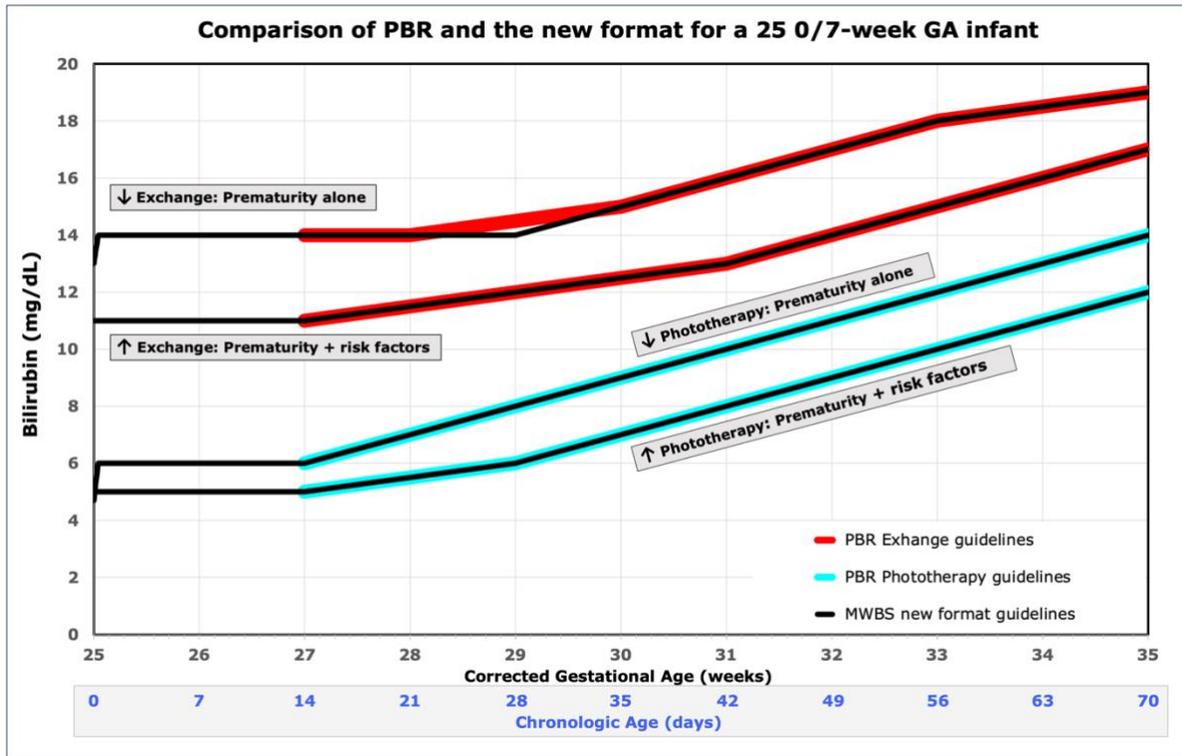
- The complete High Risk Phototherapy guideline consists of 2 line segments
- The complete Low Risk Phototherapy guideline consists of 1 line segment
- The complete High Risk Exchange Transfusion guideline consists of 2 line segments
- The complete Low Risk Exchange Transfusion guideline consists of 3 line segments

## Supplemental Figure 2 – Integration of AAP and MWBS Guidelines



Supplemental Figure 2: The chronologic age-based format of the guidelines for infants <35 weeks' GA (black line) prioritizes the initial segment of the AAP high-risk 35 weeks' GA guidelines (turquoise line) up to the point of intersection with the MWBS guidelines (red line). Examples are shown for high-risk 24 0/7-weeks' GA and low-risk 34 0/7-weeks' GA infants.

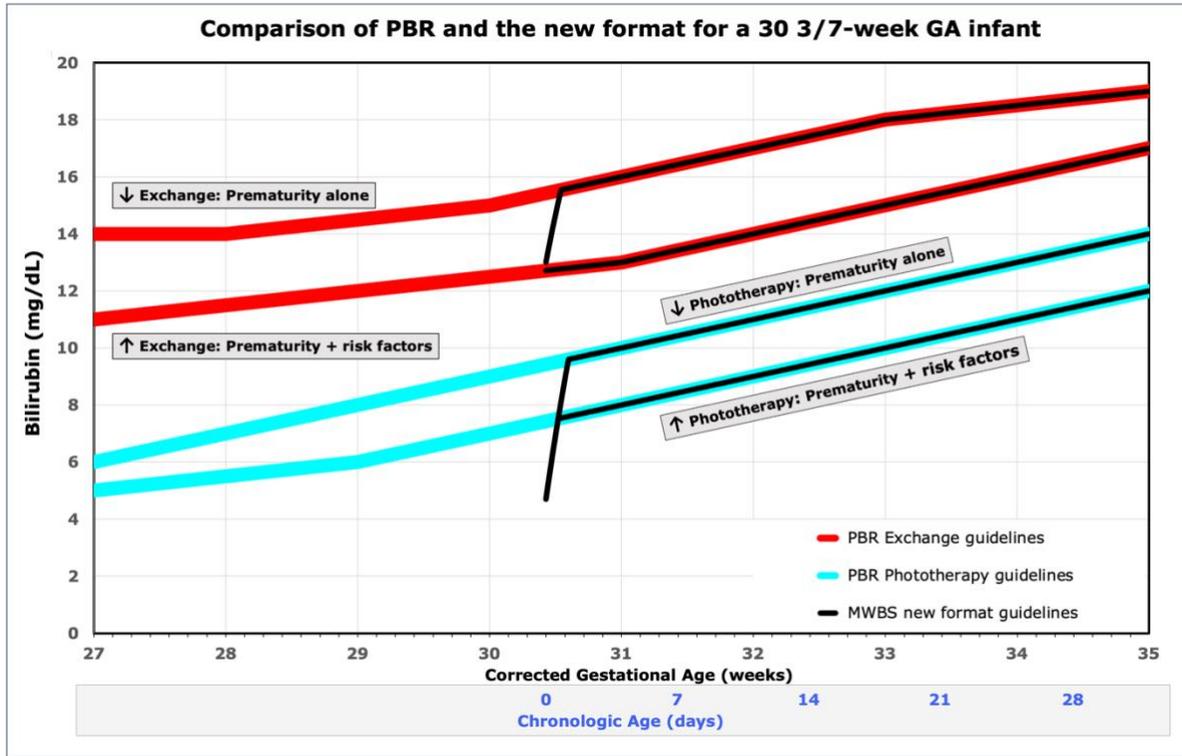
### Supplemental Figure 3a – Comparison of PBR and the New Format



Supplemental Figure 3a: The chronologic age-based guidelines of the new format (black lines) for a 25 -0/7-weeks’ GA infant are directly compared to the PBR CGA-based guidelines for phototherapy (turquoise. lines) and exchange transfusion (red lines). The lower initial threshold lines of the new format for low-risk and high-risk phototherapy and low-risk exchange transfusion are based on the integration of the AAP high-risk thresholds for 35-weeks’ GA infants. (All thresholds of the high-risk exchange transfusion guideline exceed the AAP thresholds.)

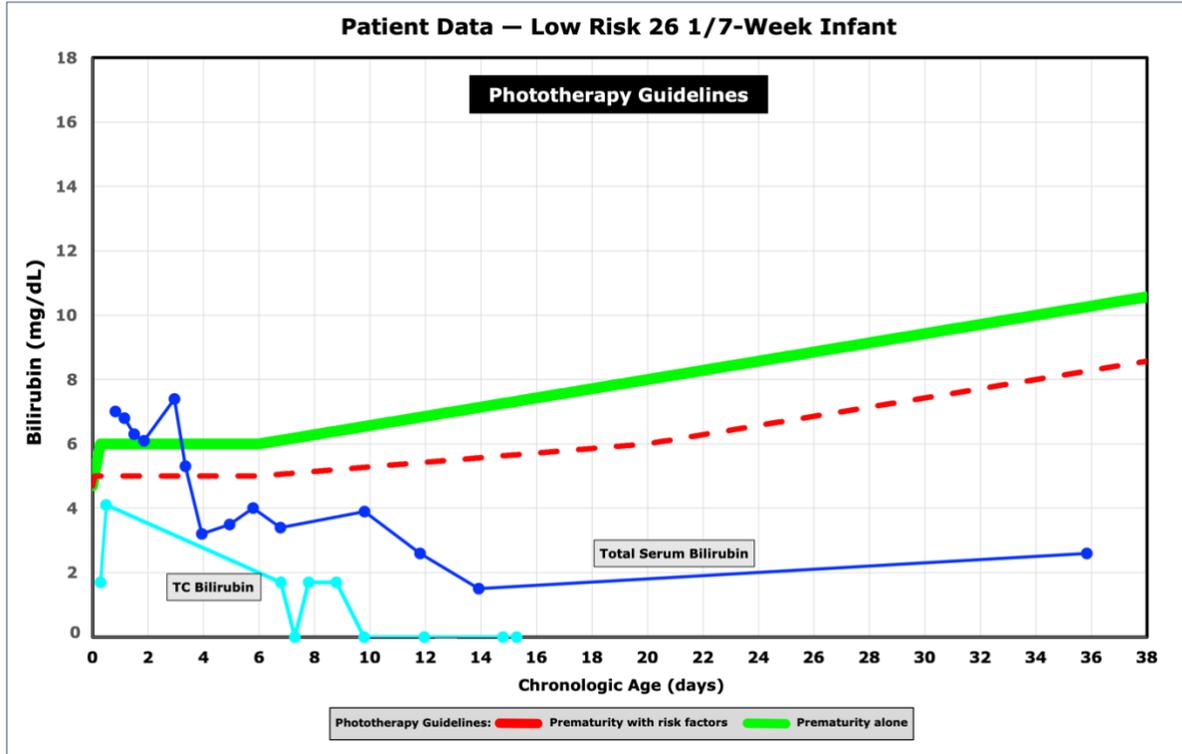
The PBR guidelines extend to a minimum of 27 weeks CGA; the lower limit of the MBWS guidelines is <28 weeks CGA.

### Supplemental Figure 3b – Comparison of PBR and the New Format



**Supplemental Figure 3b:** The chronologic age-based guidelines of the new format (black lines) for a 30 3/7-weeks' GA infant are directly compared to the PBR CGA-based guidelines for phototherapy (turquoise lines) and exchange transfusion (red lines). The lower initial threshold lines of the chronologic age-based format for low-risk and high-risk phototherapy and low-risk exchange transfusion are based on the integration of the AAP high-risk thresholds for 35-weeks' GA infants. All thresholds of the high-risk exchange transfusion guideline exceed the AAP thresholds.

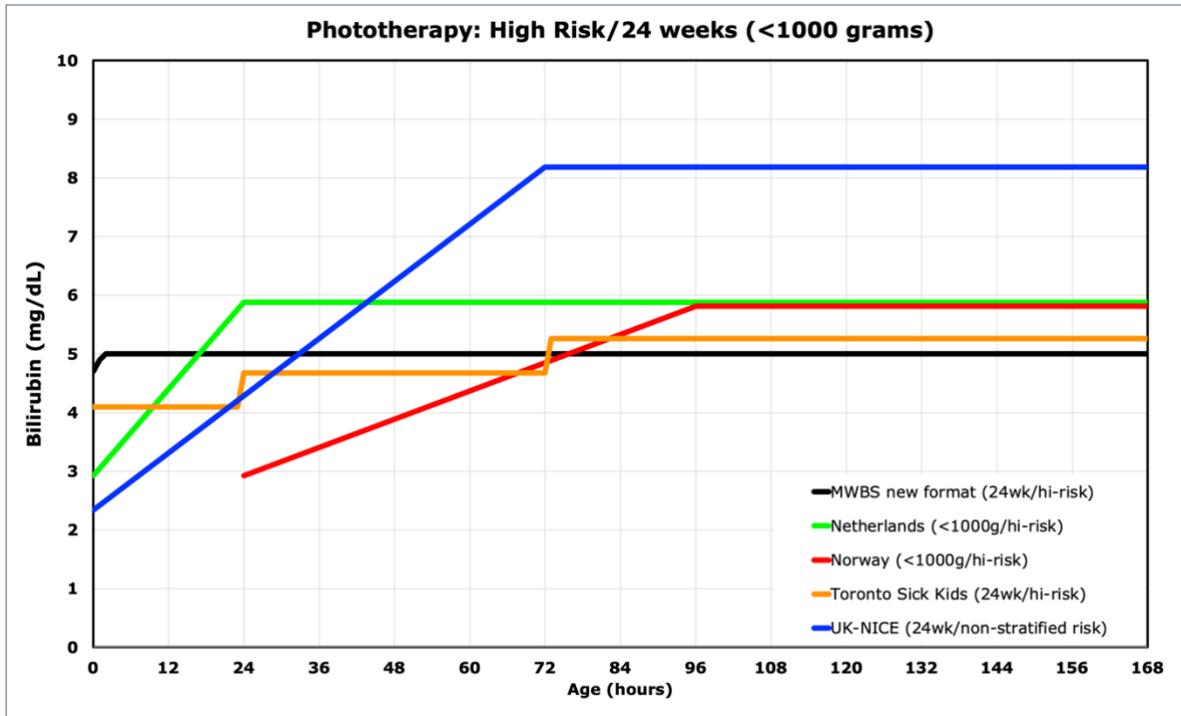
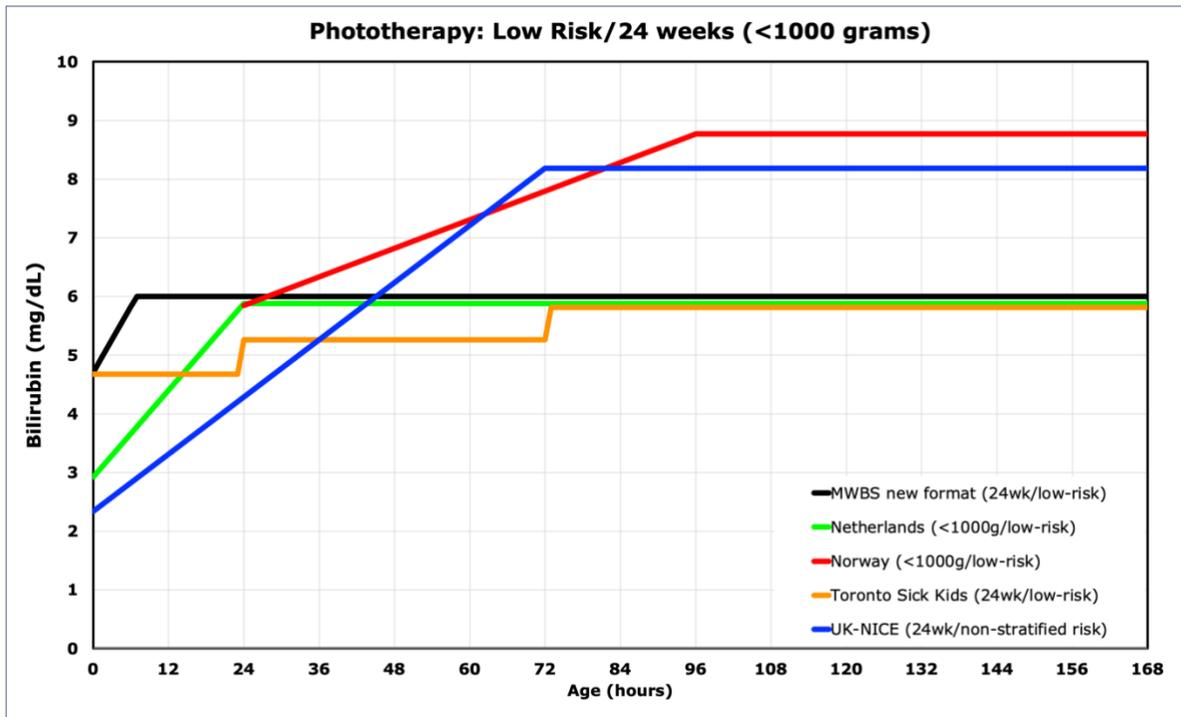
### Supplemental Figure 4 – Sample Clinical Data



Supplemental Figure 4: Sample clinical data for a low-risk 26 1/7-week GA infant. The initial curved line representing the high-risk 35-week GA phototherapy thresholds is lower than the thresholds of MWBS until 7 hours of age. The subsequent line segments follow the recommendations of MWBS. The active low-risk guideline is indicated by the relatively increased thickness of the green line; the inactive high-risk guideline is shown with a thinner dashed red line.

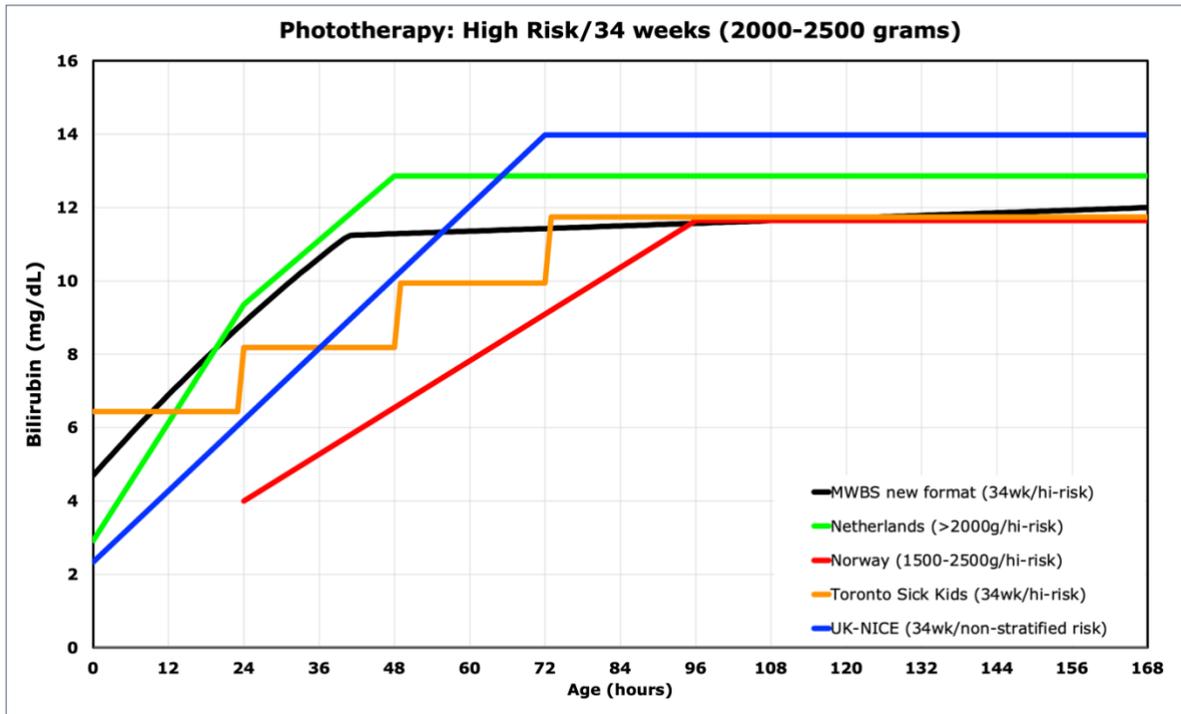
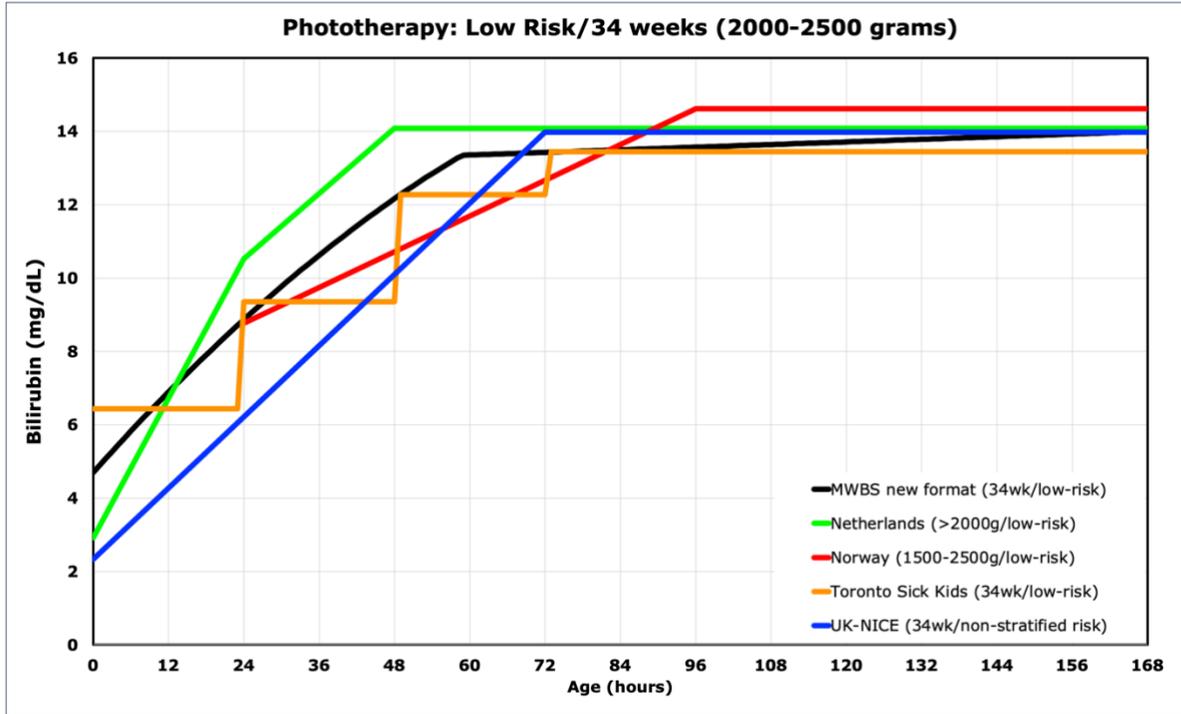
In an EHR, risk factors can be displayed in association with the graphs and manually or automatically checked according to relevant clinical and lab data. The graphs can be annotated with periods of phototherapy, alerts, and an adjacent list of the bilirubin levels.

### Supplemental Figure 5a – Comparison of 24 week Phototherapy Guidelines



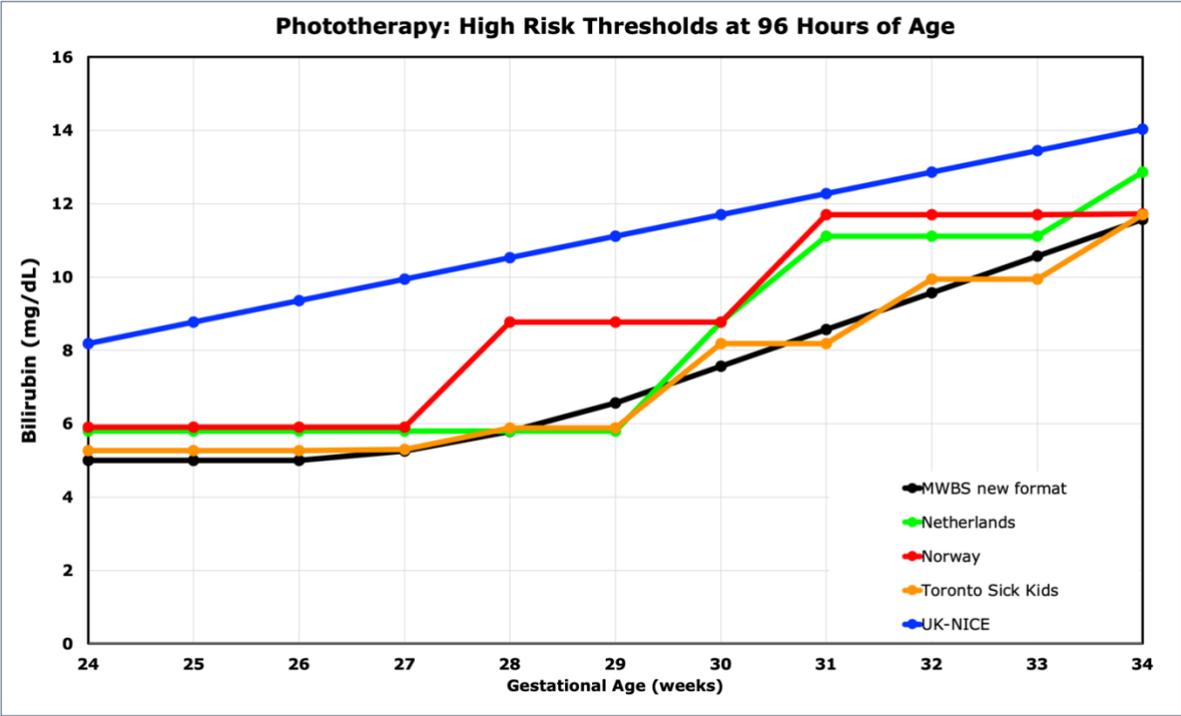
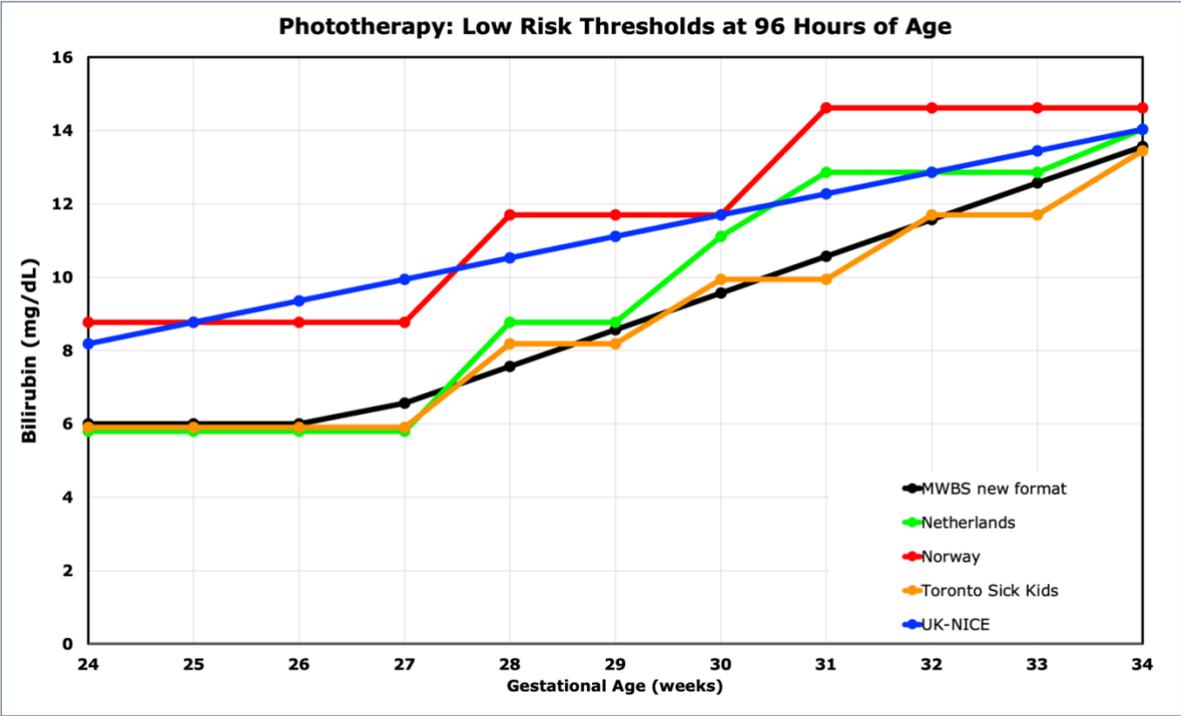
Supplemental Figure 5a: Comparison of international and institutional phototherapy guidelines for low-risk and high-risk 24-week GA infants for the first 7 days of life. The Netherlands and Norwegian guidelines are birthweight-based as indicated.

**Supplemental Figure 5b – Comparison of 34 week Phototherapy Guidelines**



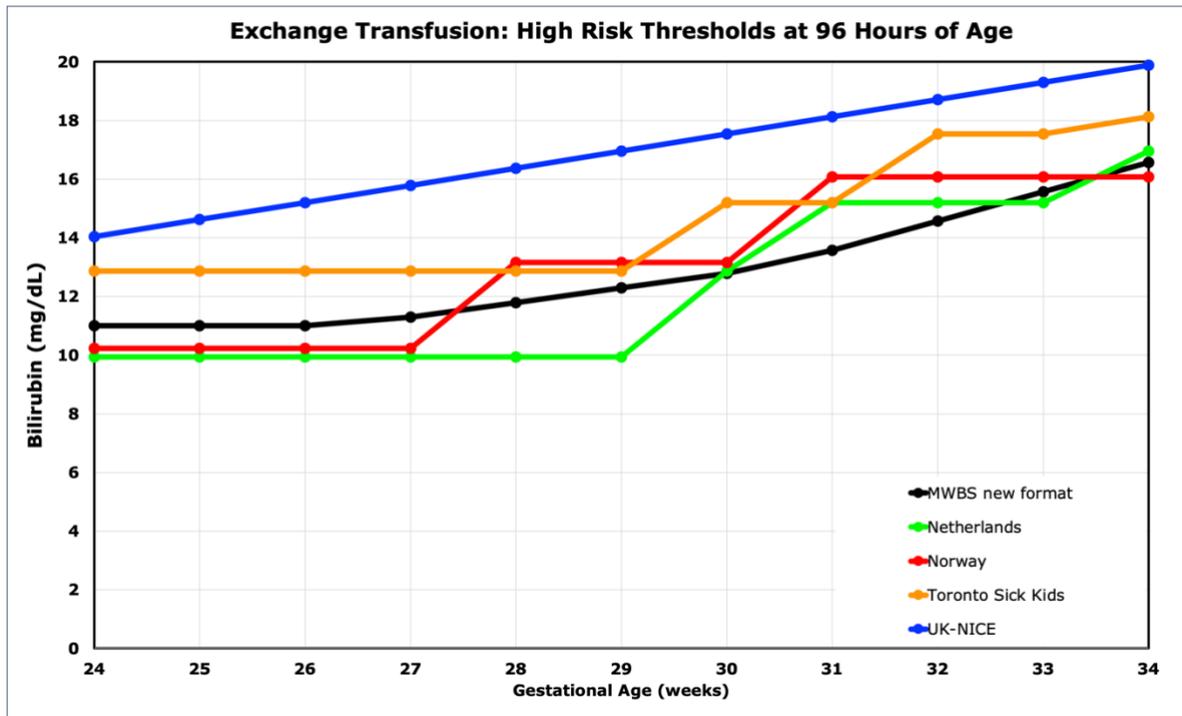
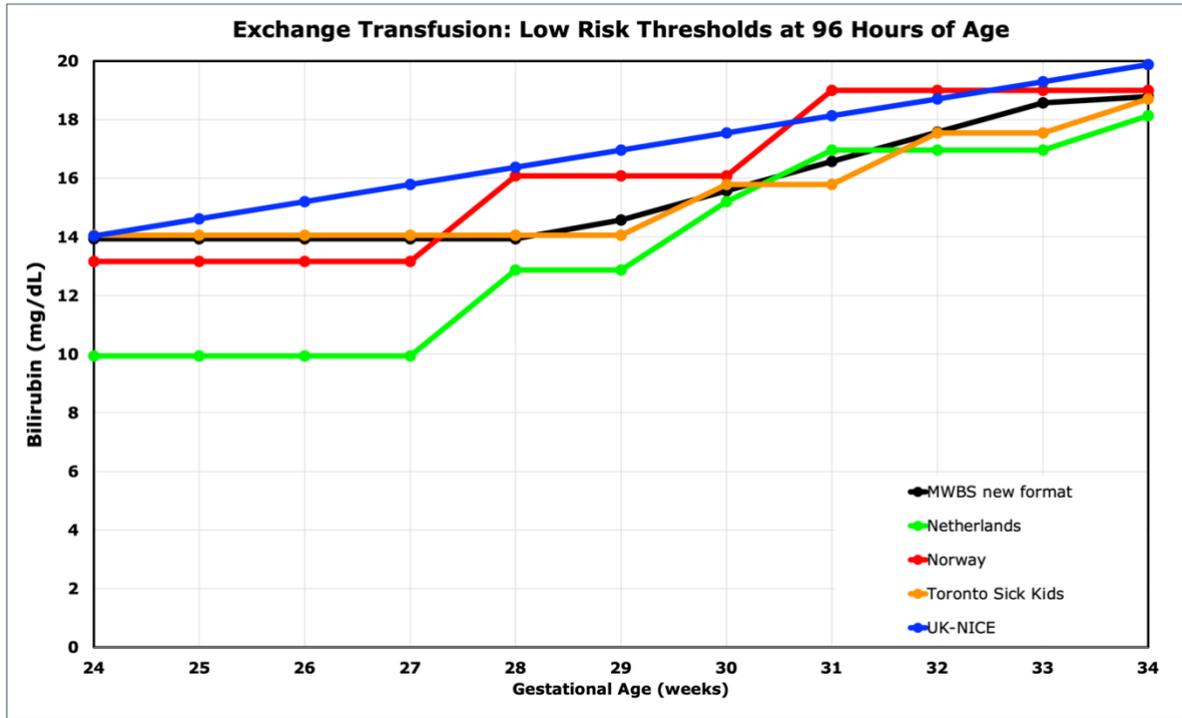
Supplemental Figure 5b: Comparison of international and institutional exchange transfusion guidelines for 34-week GA infants for the first 7 days of life. The Netherlands and Norwegian guidelines are birthweight-based, as indicated.

Supplemental Figure 6a – Comparison of Phototherapy Guidelines at 96 Hours of Age



Supplemental Figure 6a: Comparison of international and institutional phototherapy guidelines at 96 hours of age for low-risk and high-risk infants.

Supplemental Figure 6b - Comparison of Exchange Guidelines at 96 Hours of Age



Supplemental Figure 6b: Comparison of international and institutional exchange transfusion guidelines at 96 hours of age for low-risk and high-risk infants.