

# Neonatal Bilirubin

September 2019

**Notification:** UCHealth has standardized bilirubin testing at all UCHealth locations currently utilizing the Vitros 5600. (Locations listed below)

- Purpose:**
- To standardize the method of testing for serial monitoring for hyperbilirubinemia
  - To better assess the risk of biliary atresia using conjugated bilirubin (BC) rather than DBIL.
    - DBIL is misleading because it is a calculation performed using a direct measure of Total Bilirubin (TBIL) minus the direct measure of unconjugated bilirubin. (TBIL-BU=DBIL). Unfortunately, TBIL also includes Delta Bilirubin which can falsely elevate the calculated DBIL, leading to unnecessary follow-up testing.
- ✓ **New recommendation of < 1 year-** Neonatal panels that contain bilirubin are recommended on all patients under the age of 1 year. Maintaining the same method through the age of 1 year allows a more accurate depiction of bilirubin trends.
- ✓ **Order name changes** – Orders that are recommended <1 year are indicated by a “<1 YR” within the name of the order.
- ✓ **Critical value change** – TBIL/NBIL critical values have been standardized at all UCHealth locations. TBIL/NBIL values >14.9 will be considered critical.

Test	Test includes:	Lab order
Bilirubin Total Neonatal <1YR	Neonatal Bilirubin	LAB7026
Neonatal Bilirubin Panel (includes Direct/BC) <1 YR	Neonatal Bilirubin, BC, BU	LAB4222
Neonatal Comprehensive Metabolic Panel <1 YR	CMP + Neonatal bilirubin, BC, BU	LAB5051
Neonatal Hepatic Function Panel < 1 YR	Hepatic + Neonatal bilirubin, BC, BU	LAB5085
Neonatal TPN Basic Metabolic Panel < 1YR	BMP + TRIG, PHOS, MAG, Neonatal bilirubin, BC, BU	LAB3790
Neonatal TPN Comprehensive Metabolic Panel < 1 YR	CMP + TRIG, PHOS, MAG, Neonatal bilirubin, BC, BU	LAB3791

- ✓ **Best Practice Advisory** – EPIC logic will compare the order to the patient’s age. When an inappropriate order is placed, EPIC will recommend the appropriate bilirubin for that patient. The BPA can be avoided in the future by adding age appropriate bilirubin panels to your preference list.
- ✓ **Reference ranges** – Since our referral hospital for this patient population uses the same Vitros 5600 platform, we have aligned our ranges with Children’s of Colorado, to allow a more streamlined interpretation of results.

Total Bilirubin		
TEST	Age	New Range (mg/dL)
Neonatal Bilirubin <1 YR	0 to <1 day	0.1-5.8
	1 to <3 days	0.1-8.5
	3 to 5 days	0.1-11.5
	6 to 30 days	0.1-11.5*
	*Interpretive comment: “Decreasing from 11.5 to adult range”	
	31 days - <1YR	0.2-1.2
Total Bilirubin ≥ 1 YR	≥1Year (TBIL)	0.2-1.3
Critical results for patients ≤30 days old		>14.9

Bilirubin Conjugated/Direct		
Test	Age	New Range (mg/dL)
Bc <1 YR	Neonates (≤ 30 days) Bc	0.0-0.6
	31 days - <1 YR (Bc)	0.0-0.3
Dbil ≥ 1 YR	≥ 1 YR (Dbil)	0.0-0.4
Dbil for adults is a calculation performed by Vitros. Dbil = Tbil - Bu		

Bilirubin Unconjugated/Indirect		
Test	Age	New Range (mg/dL)
Bu <1 Year	0 to < 1 day	0.1-5.8
	1 to <3 days	0.1-8.5
	3 to 5 days	0.1-11.5
	6 to 30 days	0.1-11.5*
	*Interpretive Comment: “Decreasing from 11.5 to adult range.”	
	31 days - <1 YR	0.0-1.1
Ibil ≥ 1 Year	≥ 1 YR (Ibil)	0.0-1.0
Ibil for adults is a calculation performed in Beaker. Ibil = Tbil - Bc		

This information affects the following UCHealth Locations: Poudre Valley Hospital, Medical Center of the Rockies, Memorial North, Memorial Central, Longs Peak Hospital, Greeley Hospital, Harmony ED, Highlands Ranch Hospital, and Pikes Peak Regional Hospital. For more information or questions, please call the laboratory at the locations listed above.

References:

- Soldin, Steven et al Pediatric Reference Intervals, Seventh Edition, AACC Press, 2011
- Children’s Hospital, Denver Colorado