

"The objective is to create a formula that predicts the optimal insertion depth of a real time ultrasound-guided CVC in the right internal jugular vein (RIJV) in newborns" Montes-Tapia et al (2019).



## Abstract:

**BACKGROUND:** Poor positioning of a central venous catheter (CVC) can cause severe complications. The objective is to create a formula that predicts the optimal insertion depth of a real time ultrasound-guided CVC in the right internal jugular vein (RIJV) in newborns.

**METHODS:** Between 2015 and 2017, 91 newborns that required a CVC were included in a prospective observational study. Variables such as gestational age, gender, weight, height, and neck length were studied. On the chest x-ray, the distance between the insertion site on the skin and the catheter tip was measured.

**RESULTS:** Of the patients included, 50 (54.9%) were males and 40 (44.4%) females; 64 (70.3%) were preterm. Mean gestational age was 33.44 (25 to 41) weeks, weight 2020 (580 to 3980) g, and height 43.04 (26 to 53) cm. Variables were correlated with catheter length and an algorithm was modeled for the introduction method, in which the highest corrected determination coefficient was obtained for weight ( $R^2 = 0.723$ ).

**CONCLUSION:** This study demonstrated that the weight of the newborn was the most significant individual predictor of optimal insertion depth of a CVC in the RIJV. The formula  $Y = 2.6 + 0.7$  (weight in kg) that we suggest is practical and reproducible.

LEVEL OF EVIDENCE: Level IV.

Tunneled central venous catheters in pediatric intestinal failure

Central venous access catheter tunnel rupture

Outcome of retained fractured central venous catheters

**Reference:**

Montes-Tapia, F., Hernández-Trejo, K., García-Rodríguez, F., Jaime-Reyes, J., Treviño-Garza, C., Cárdenas-Del Castillo, B., Rodríguez-Balderrama, I. and de la O-Cavazos, M. (2019) Predicting the optimal depth of ultrasound-guided right internal jugular vein central venous catheters in neonates. *Journal of Pediatric Surgery*. December 30th. doi: 10.1016/j.jpedsurg.2019.12.004. .

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