



Calculating umbilical line insertion depth^a

Catheter insertion depth	Insertion depth (cm)
Umbilical venous catheter (UVC)	(Birth weight [kg] x 1.5) + 5 + cord stump
Umbilical arterial catheter (UAC)	(Birth weight [kg] x 3) + 9 + cord stump

Central line imaging required after initial insertion^b

		AP (Chest and abdomen)	Lateral shoot through (Chest and abdomen)
UAC	At initial insertion or on admission	x	x
	Follow up	x	
UVC	At initial insertion or on admission	x	x
	Follow up	x	
Arm NICU PICC	At initial insertion or on admission	x Both shoulders abducted 30°	x Both arms at patient's side
	Follow up	x	
Arm IGT PICC	At end of procedure, done in IGT suite	x Both shoulders abducted 30°	
Leg NICU PICC	At initial insertion or on admission	x Frog leg position	x Frog leg position
	Follow up	x	

^aBased on The Hospital for Sick Children 2016 NICU Central Line Radiography Protocol

^bBased on Kieran et al. 2016 and Shukla & Ferrera 1986

Central line position guide^a

	Target ^b	Avoid	Most important view	Guidelines for x-ray after catheter adjustment
UAC	T6-9 (preferred) L3-4 (acceptable)	T10-L2 Below L4 (bifurcation of aorta)	AP	<p>Use only the most important view to assess catheter position after adjustment</p> <p>**Repeat x-ray for ALL catheters pulled by ≥ 1 cm EXCEPT for UVCs pulled back below the liver (see below)</p> <p>An x-ray is NOT required for a UVC pulled back to below the liver if:</p> <ul style="list-style-type: none"> Gestational age ≥ 35 wk OR ≥ 2.5 kg and UVC pulled to ≤ 4 cm marking at umbilicus Gestational age < 35 wk AND < 2.5 kg and UVC pulled to ≤ 3 cm marking at umbilicus <p>If UVC marking at umbilicus is deeper than these values, an x-ray is required to ensure that the catheter tip is not in the liver</p>
UVC	~T8-9 Junction of IVC and right atrium	Right atrium ~ T7 Portal vein ~ T11	AP	
Right Arm PICC	T5-6	Right atrium about below T6	AP	
Left Arm PICC	T5-6	Right atrium about below T6	AP	
Leg PICC	T9-T11 (preferred) Above L4 (acceptable)	Right atrium ~ T7 Renal veins ~ L1 Below L4 (bifurcation of IVC)	AP	

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^bBased on Kieran et al. 2016 and Shukla & Ferrera 1986