Treatment of Central Venous Access Device Occlusion – Adult/Pediatric/Neonatal – Consensus Care Guideline Summary

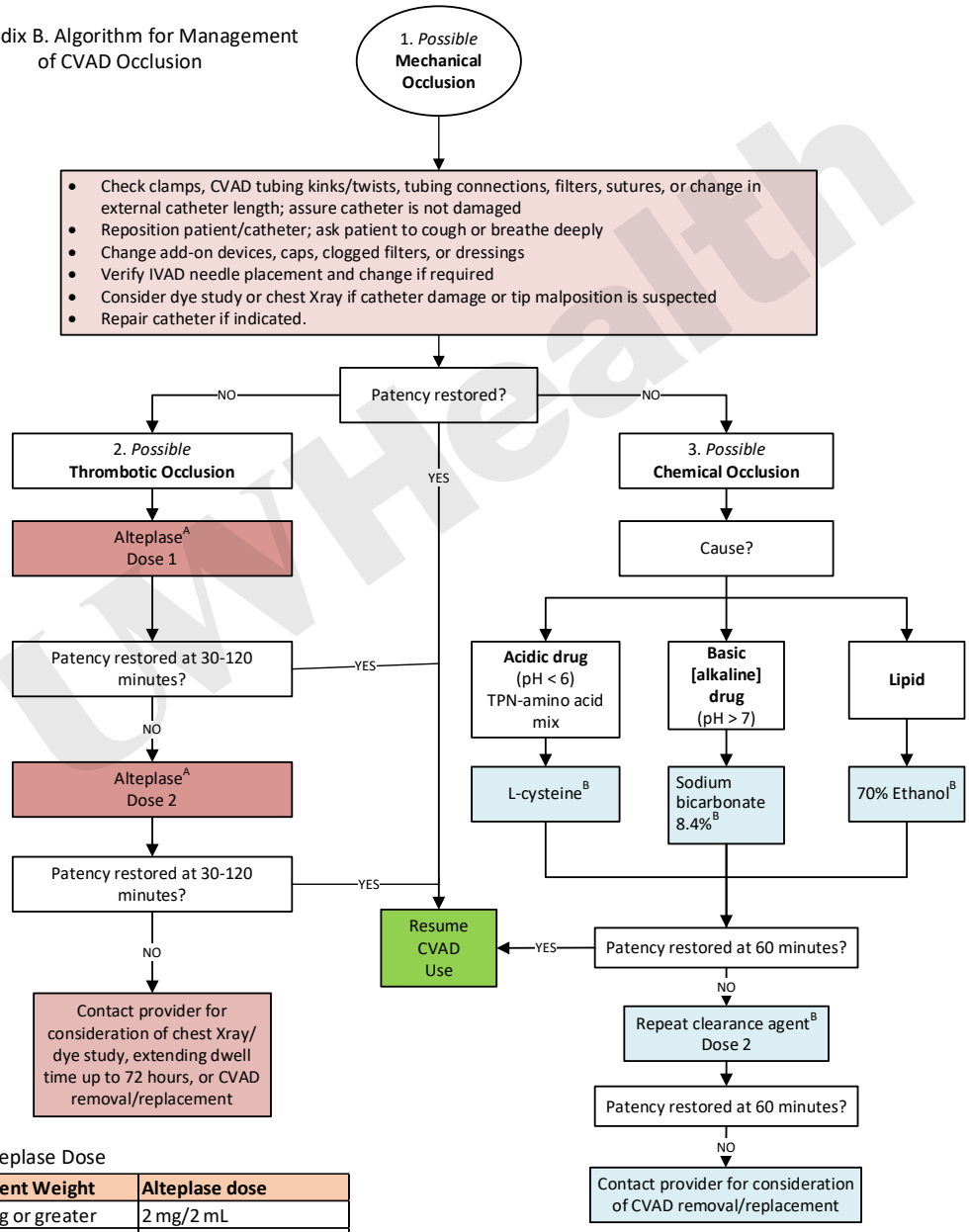
Target Population: Adult/pediatric/neonatal patients with occlusion of a central venous access device (CVAD)

Full Guideline: *Treatment of Central Venous Access Device Occlusion Consensus Care Guideline*

Guideline Overview

- Assessment of catheter patency and signs of CVAD occlusion
- Occlusion types: mechanical, thrombotic, and chemical
- Attempt to resolve occlusions using mechanical manipulations first
- Thrombotic occlusions should be considered if mechanical manipulation unsuccessful
- Treat thrombotic occlusion with alteplase (Cathflo Activase®) at appropriate weight-based dose
- Chemical occlusion due to acidic drugs, alkaline drugs or lipids should be considered if both mechanical and thrombotic cause are ruled out

Appendix B. Algorithm for Management of CVAD Occlusion



[A]Alteplase Dose

Patient Weight	Alteplase dose
30 kg or greater	2 mg/2 mL
10 - 30 kg	1 mg/1 mL
Less than 10 kg	See Table 3 for volume
Implanted port	2 mg/2 mL regardless of weight or age

Dose may not exceed 2 mg/2 mL

[B]Chemical Clearance Agent Dose: fill volume of lumen

Broadhurst D, Cernusca C, Cook C, et al. CVAA Occlusion Management Guideline for Central Venous Access Devices. *Vascular Access*. 2019;13(1):1-30.
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Table 3. ALTEPLASE DOSE PEDIATRIC PICC LINES				
Cut Length	**1.0 French** Single Lumen Total Length 20 cm	**1.9 French** Single Lumen Total Length 30 cm	**1.9 French** Single Lumen Total Length 50 cm	**2.6 French** Double Lumen Total Length 50 cm
	110% Lumen Priming Volume (mL)			
< 5 cm	0.02	0.02	0.02	-
6-10 cm	0.04	0.03	0.02	0.05
11-15 cm	0.06	0.04	0.03	0.07
16-20 cm	0.07	0.05	0.04	0.1
21-25 cm	-	0.06	0.06	0.12
26-30 cm	-	0.08	0.07	0.15
31-35 cm	-	-	0.08	0.17
36-40 cm	-	-	0.09	0.19
41-50 cm	-	-	0.11	0.24
Cut Length	**3 French** Single Lumen Total Length 60 cm	**4 French** Single, Double Lumen Total Length 60 cm	**5 French** Single, Double, Triple Lumen Total Length 60 cm	
	110% Lumen Priming Volume (mL)			
< 10 cm	0.1	0.12	0.13	
11-20 cm	0.2	0.2	0.3	
21-30 cm	0.3	0.4	0.4	
31-40 cm	0.4	0.5	0.5	
41-50 cm	0.5	0.6	0.6	
51-60 cm	0.58	0.74	0.77	

NOTE: Pediatric central lines may be cut to fit smaller patients and so are not the original length provided by the manufacturer. Please review Lines, Drains, and Airways (LDA) Properties in Health Link for the line length after cutting.

Table 4. Types of Chemical Occlusion and Treatment Options

Cause	Clearance Agent	Dwell Time
Calcium phosphate precipitate	L-Cysteine	Irrigate with gentle to and fro motion for 1-2 minutes; if patency not restored, dwell 60 minutes and repeat above hourly
Acidic drug precipitate pH < 6 (e.g. vancomycin, piperacillin, parenteral nutrition amino acids	L-Cysteine	60 minutes
Alkaline drug precipitate pH > 7 (e.g. phenytoin, ganciclovir, ampicillin, heparin)	Sodium bicarbonate ($NaHCO_3$) 8.4% 1 meq/mL	60 minutes
Lipid deposition (e.g. parenteral nutrition)	70% ethanol	60 minutes