



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES
HARBOR-UCLA MEDICAL CENTER

SUBJECT: GUIDELINES FOR ANTIBIOTIC LOCK AND ETHANOL LOCK THERAPY

POLICY NO. 325R

CATEGORY: Provision of Care	EFFECTIVE DATE: 7/18
POLICY CONTACT: Jennie Ung, PharmD	UPDATE/REVISION DATE: 2/22
REVIEWED BY COMMITTEE(S): Pharmacy and Therapeutics	

PURPOSE:

To provide guidelines for appropriate use of antibiotic lock therapy (ALT) and ethanol lock therapy (ELT) in the treatment of Central Line-associated Bloodstream Infection (CLABSI) in adult and pediatric patients whose line cannot easily be removed and/or replaced because of ongoing necessity for central access and lack of alternative access (e.g., peripheral IV or placing new line at the new site).

POLICY:

Providers at Harbor-UCLA Medical Center may consider using ALT or ELT for patients who have CLABSI with no signs of exit site or tunnel infection and who require salvage of current intravascular catheter secondary to limited alternative intravascular access. The use of ALT and ELT must be approved by an Infectious Disease specialist.

PROCEDURE:

1. ALT solutions containing the desired antimicrobial concentration (Appendix A) are mixed with heparin or normal saline in a sufficient volume to fill the catheter lumen.
2. Ports to be used and the volume of solution instilled should be specified by the physician. Volume varies depending on the volume of lumen and hub of the particular size line being treated (Appendix C).
3. Dwell time for antibiotic lock fluid should be specified by the physician (range of 6-48 hours). Dwell time depends on clinical circumstances and availability of port but should not exceed 48 hours. If it is anticipated that the dwell time will be less than 6 hours, lock therapy should not be used.
4. Flush the catheter with normal saline and instill indicated volume of lock solution.
5. The caps of the catheter hubs then are secured tightly to "lock" the antibiotic or ethanol into the lumen of the catheter. Use labels to indicate the locked lumen so that medication is not flushed through the catheter.
6. Lock therapy should not be removed until the minimum dwell time has elapsed (e.g., no infusion or flushes) unless a life-threatening situation requires early removal of lock solution.
7. At the conclusion of the lock period, aspirate the lock solution volume completely from the catheter

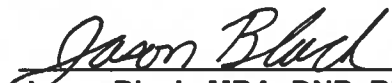
REVISED: 3/19

REVIEWED: 7/18, 3/19, 2/22

APPROVED BY:


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before administering the next dose.

8. ALT precautions:
 - a. Do not prepare ALT using heparin for patients with Heparin-Induced Thrombocytopenia (HIT).
 - b. Review allergy history thoroughly to prevent an allergic reaction to requested antibiotics.
9. ELT is **NOT** to be used in the following patients:
 - a. Those with polyurethane catheters (See appendix D for catheter material)
 - b. Those who received isoniazid within 24 hours, metronidazole within 48 hours, disulfiram within 7 days
 - c. Those less than 6 months of age or weighing less than 6kg
 - d. Those with a history of ethanol allergy
10. Refer to Appendix D for Physician Ordering Procedure.
11. Refer to Appendix E for Pharmacy Preparation and Dispensing Procedure.

Reviewed and approved by:
Medical Executive Committee on date 02/2022



Beverley A. Petrie, M.D.
President, Professional Staff Association

Appendix A: Lock Solutions

Antibiotic Locks with Heparin
ceFAZolin 5mg/mL- heparin 2500unit/ mL
cefTAZidime 10mg/mL- heparin 2500unit/mL
gentamicin 2.5mg/mL- heparin 2500unit/mL
vancomycin 5mg/mL- gentamicin 2.5mg/mL- heparin 2500unit/mL
vancomycin 5mg/mL - heparin 2500unit/mL
Anticoagulant-Free Antibiotic Locks
ceFAZolin 5mg/mL
cefTAZidime 10mg/mL
gentamicin 2.5mg/mL
vancomycin 5mg/mL
Ethanol 70%



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Appendix B: Antibiotic Lock Therapy Volumes (Maximum volume is 5mL)

Type of Catheter	ALT Catheter Volume (mL per lumen)			
	NICU patients	Patient wt < 10kg	Wt 10-30kg	Wt > 30kg
Non-tunneled CVC (i.e., PICC, subclavian, triple lumen)	Per catheter volume	2	3	3
Tunneled CVC (i.e., Broviac, Hickman)		3	3	5

Appendix C: Ethanol Lock Therapy Volumes (Maximum volume is 2mL)

Single-lumen Tunneled Catheter	Dose Volume (mL)
Broviac 4.2 Fr (ID 0.7mm)	0.8
Broviac 6.6 Fr (ID 1mm)	0.8
Medcomp Catheter	1.2
Double-lumen Tunneled Catheter	
Hickman Double Lumen 7 Fr Distal (red) (ID 1mm)	1.2
Hickman Double Lumen 9 Fr Distal (white) (ID 0.7mm)	1.2
Medcomp 8F or 10 F	1.2
Port-A-Cath	
Any port	1.4

Appendix D: Catheter types

CATHETER	POLYMER	COMPATIBLE WITH ≥70% ETHANOL?
AngioDynamics & Horizon Medical Products		
Dialysis Even More Flow catheter kit	Carbothane	No
DuraFlow dialysis kit	Carbothane	No
DuraFlow straight basic 24cm hemodialysis kit	Carbothane	No
Port Smart CT 9.6 Fr outer diameter detached silicone catheter	Carbothane	No
Triple lumen apheresis CV-332	Polyurethane	No
Arrow International		
9 Fr Central venous access kit two lumen used w/ 7.5-8 Fr	Polyurethane	No
Central venous catheter SGL 7 Fr 16cm PU SS-14701	Polyurethane	No
Double lumen 7 Fr CVP catheter	Polyurethane	No
Tray – Central venous 18g catheter single lumen over 20g intro scalpel 18g extra thin 4.8 Fr 80cm	Polyurethane	No
Triple lumen 7 Fr 20cm catheter AK-15703-CDC	Polyurethane	No
Triple lumen catheter kit 5.5 Fr 13cm	Polyurethane	No
Triple lumen catheter 7 Fr 30cm (LX)	Polyurethane	No
Triple lumen central venous catheter 7 Fr x 18g	Polyurethane	No
Triple lumen pedi catheter 5.5 Fr 8cm	Polyurethane	No
Bard/Central Venous Catheter		



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CATHETER	POLYMER	COMPATIBLE WITH ≥70% ETHANOL?
Abramson triple lumen 15mm diameter 15in length drain sump, latex free w/ filter	Polyurethane	No
Bard dual lumen port 9.5 Fr	Silicone	Yes
Broviac 6.6 Fr single lumen ingrowth cuff w/ peel stylet	Silicone	Yes
AngioDynamics & Horizon Medical Products		
Dialysis Even More Flow catheter kit	Carbothane	No
DuraFlow dialysis kit	Carbothane	No
DuraFlow straight basic 24cm hemodialysis kit	Carbothane	No
Port Smart CT 9.6 Fr outer diameter detached silicone catheter	Carbothane	No
Triple lumen apheresis CV-332	Polyurethane	No
Arrow International		
9 Fr Central venous access kit two lumen used w/ 7.5-8 Fr	Polyurethane	No
Central venous catheter SGL 7 Fr 16cm PU SS-14701	Polyurethane	No
Double lumen 7 Fr CVP catheter	Polyurethane	No
Tray – Central venous 18g catheter single lumen over 20g intro scalpel 18g extra thin 4.8 Fr 80cm	Polyurethane	No
Triple lumen 7 Fr 20cm catheter AK-15703-CDC	Polyurethane	No
Triple lumen catheter kit 5.5 Fr 13cm	Polyurethane	No
Triple lumen catheter 7 Fr 30cm (LX)	Polyurethane	No
Triple lumen central venous catheter 7 Fr x 18g	Polyurethane	No
Triple lumen pedi catheter 5.5 Fr 8cm	Polyurethane	No
Bard/Central Venous Catheter		
Abramson triple lumen 15mm diameter 15in length drain sump, latex free w/ filter	Polyurethane	No
Bard dual lumen port 9.5 Fr	Silicone	Yes
Broviac 6.6 Fr single lumen ingrowth cuff w/ peel stylet	Silicone	Yes
Broviac catheter single lumen 2.7Fr single lumen ingrowth cuff	Silicone	Yes
Broviac catheter single lumen 4.2 Fr Ped	Silicone	Yes
Chronic femoral hemodialysis catheter 16 Fr 27cm	Polyurethane	No
Groshong catheter single lumen 8 Fr ingrowth/1 antimicrobial cuff	Silicone	Yes
Groshong port 7.0 Fr single lumen	Silicone	Yes
Hemosplit long term hemodialysis catheter 16 Fr 19cm	Polyurethane	No
Hemosplit long term hemodialysis catheter 16 Fr 23cm	Polyurethane	No
Hemosplit long term hemodialysis catheter 16 Fr 27cm	Polyurethane	No
Hickman catheter 9 Fr	Silicone	Yes
Hickman catheter 9.6 Fr single lumen ingrowth/4 antimicrobial cuff	Silicone	Yes
Hickman 13.5 x 36 x 19 chronic hemodialysis double lumen	Silicone	Yes
Hickman catheter 13.5 x 40 x 23 hemodialysis dual lumen	Silicone	Yes



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Hickman catheter 13.5 x 45 x 28 chronic dual hemodialysis straight antimicrobial cuff	Silicone	Yes
Hickman catheter 13.5 x 50 x 33 hemodialysis tray chronic dual straight antimicrobial cuff	Silicone	Yes
Hickman catheter dual lumen 7 Fr	Silicone	Yes
Hickman DL 12 Fr 0600620	Silicone	Yes
Hickman triple lumen 12 Fr peel apart introducer kit	Silicone	Yes
Infusi-Port implantable access port	Polyurethane	No
ISP MRI port with 6 Fr attachable Chronoflex catheter	Polyurethane	No
MRI infusion port 9.6 Fr ATT open ended peel apart introducer	Silicone	Yes
Port Power 8 Fr Chronoflex	Silicone/Polyurethane	No
Port Power MRI device w/ 8 Fr Chronoflex catheter	Polyurethane	No
Port Power MRI device w/ 8 Fr polyurethane catheter	Polyurethane	No
Single MRI infusion port 9.6 Fr pre-att open ended	Silicone	Yes
Slim Port dual catheter 7 Fr	Silicone	Yes
Vitacuff dialysis catheter 60cm	Silicone	Yes
Cook Group Incorporation		
Arterial femoral 3 Fr x 8cm single lumen pedi central line	Polyurethane	Yes
Double lumen central venous catheter 4 Fr	Polyurethane	No
Double lumen pedi 5 Fr catheter	Polyurethane	Yes
Peritoneal dialysis kit 8.5 Fr x 8cm	Polyurethane	Yes
Tray – single lumen central venous catheter 3 Fr 8cm	Silicone	Yes
Edwards Lifesciences		
Triple lumen CVC w/ oximetry kit	Polyvinyl chloride	No
Kendall Company		
Femoral dialysis catheter 11.5 Fr	Carbothane	Unknown
Mahurkar 13cm triple lumen catheter	Carbothane/Silicone	Unknown
Mahurkar 16cm triple lumen catheter	Carbothane/Silicone	Unknown
Mahurkar 20cm triple lumen catheter	Carbothane/Silicone	Unknown
Mahurkar 24cm triple lumen catheter	Carbothane/Silicone	Unknown
Peritoneal dialysis catheter 62cm	Silicone	Unknown
Medcomp		
Hemodialysis catheter 8 Fr x 24cm	Silicone	Yes
Hemodialysis double lumen catheter set 12.5 Fr x 28cm	Silicone	Yes
Hemodialysis double lumen catheter set 12.5 Fr x 32cm	Silicone	Yes
Navilyst Medical		
Chest port 45-215	Polyurethane	Unknown
Port CT compatible 8 Fr 2.6mm OD 1.6mm ID 75cm length plastic power injectable	Polyurethane	Unknown
Vaxcel chest port 7 Fr	Polyurethane	Unknown
Vaxcel chest port 9 Fr	Polyurethane	Unknown
Vaxcel dialysis catheter 15 Fr x 23cm	Carbothane	Unknown
Vaxcel dialysis catheter 14 Fr x 19cm	Carbothane	Unknown
Vaxcel dialysis catheter 14 Fr x 28cm	Carbothane	Unknown
Sims Portex		



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Portacath 8.4 Fr 76cm single lumen 21-4055	Polyurethane	No
Portacath II 6 Fr single lumen 21-4083-01 low profile	Polyurethane	No
Portacath II 8.5 Fr single lumen 21-4071 low profile	Polyurethane	No
Spire Biomedical		
Alta Gold tunneled catheter	Carbothane/Polyurethane	Unknown
Decathlon Gold dialysis catheter 28cm	Carbothane/Polyurethane	Unknown
Decathlon Gold dialysis catheter 32cm	Carbothane/Polyurethane	Unknown
Double lumen dialysis catheter 24 Fr 19cm	Silicone	Unknown
Double lumen dialysis catheter 28 Fr 23cm	Silicone	Unknown
Double lumen dialysis catheter 32 Fr 27cm	Silicone	Unknown
Double lumen dialysis catheter 36 Fr 31cm	Silicone	Unknown

Neonatal and Pediatric catheters

BRAND	ITEM NUMBER	POLYMER	COMPATIBILITY WITH ≥ 70% ETHANOL
TELEFLEX	AK-42703-P1A	POLYURETHANE	NO
TELEFLEX	AK-21242-CDC	POLYURETHANE	NO
TELEFLEX	AK-12703-CDC	POLYURETHANE	NO
TELEFLEX	AK-09803-CDC	POLYURETHANE	NO
TELEFLEX	AK-04020-SPC	POLYURETHANE	NO
TELEFLEX	AK-04301-SP	POLYURETHANE	NO
BARD	1395108QD	POLYURETHANE	NO
BARD	1194108D	POLYURETHANE	NO
BARD	1295108FD	POLYURETHANE	NO

Appendix E: Physician Ordering Procedure:

ALT:

1. To order ALT in ORCHID, search for appropriate ALT power plan orderable
2. Provider will specify:
 - a. Solution requested
 - b. Port location (i.e., left and right ports)
 - c. Exact volume of solution to be instilled into the catheter
 - d. Duration of each dwell per day (minimum 6 hours)

Duration of therapy:

- Antibiotic lock should be used in conjunction with systemic antimicrobials. The lock solution must be withdrawn prior to instilling systemic antibiotics and fresh lock solution instilled afterwards.
- May administer antibiotic lock therapy without systemic antibiotics in patients with multiple positive catheter drawn blood cultures that grow coagulase negative staphylococci and concurrent negative peripheral blood cultures. Length of therapy is 10-14 days in these patients.

ELT:

1. To order ELT in ORCHID,
 - a. Search for "TNF" orderable



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- b. Therapy: "70% ethanol lock"
- c. In order comments, write:
 1. PRN q8h for blood draw, TPN, IVF change
 2. Instill _____(volume) mL of 70% ethanol solution into Broviac catheter lumen when TPN is cycled off
 - a. Withdraw contents of lumen and discard
 - b. Flush Broviac with 5mL NS. Do NOT flush without withdrawing ethanol still locked in catheter
 - c. Begin TPN infusion
 - d. When TPN infusion is completed, flush with 5mL NS
 - e. Infuse _____(volume) mL of 70% ethanol solution and lock catheter
 - f. Prior to next TPN, restart beginning at step 1
2. Provider will specify:
 - a. Exact volume of ethanol to be instilled into the catheter
 - b. Port location (i.e., left and right ports)
 - c. Duration of each dwell
 - d. Number of dwells per day
3. When ordering TPN for patients on ELT, the physician must discontinue the heparin from the TPN to avoid possible incompatibility issues.
4. The physician will verify that the catheter material is compatible with ethanol.

Appendix F: Pharmacy Preparation and Dispensing Procedure:

ALT:

1. ALT solutions will be compounded and dispensed daily.
2. Label: "For central venous catheter lock use only. Do not infuse into patient. Do not use if precipitation seen."
3. Specific pharmacy compounding instructions and stability—refer to Pharmacy Compounding Recipe

ELT:

1. Draw up the exact volume of 70% ethanol solution prescribed (up to 2mL) into an empty sterile syringe
2. Label: "For central venous catheter lock use only. Do not infuse into patient. Do not use with heparin flush."