**Member Comments for ‘Antimicrobial Lock Prophylaxis and Treatment of Catheter-Related Bloodstream Infections’ Query**

**Need for data/guidelines:**
- Need prospective controlled trials! Of 4 attempts to salvage indwelling catheters, it has only worked once. Only use prophylaxis with hx of recurrent or recent infection
- If clinical trial conducted, would want semiquantitative line cultures drawn through the "salvage line" as well as peripheral blood cultures.
- Needs more study [by 4 members, one of whom was in pediatrics]
- It is just such a challenge when pts have no other IV access options. I welcome this study. Please address the issues of infections that are not just in the lumen. What about clots around the catheter. Would be good to include Doppler studies.
- Guidelines from IDSA recommend ALT but do not give concentrations. We have developed our own concentrations and protocols. I could forward our protocol and concentrations used.
- I actually don't think that treatment works. Because of the large numbers of patients that would be needed, I am not convinced a treatment trial would be productive. I'm not sure about a trial for prophylaxis either. I think that more effort needs to be placed on the development of new catheter materials.
- I am in pediatrics where the data are even more limited than they are for adults. All of our cases have been individualized and have been hotly debated within our division (nothing like the absence of data to spark a good debate).
- Would like to learn about other people's experience
- Difficulty finding protocol/standards for ALT
- We need properly conducted ALT trials for coag-negative staph cath-related infections.
- I do not have much experience with ALT. We need more clinical trials to support its use.
- Our recently concluded randomized trial of prophylactic Hypertonic saline plus heparin as a lock solution for HD Permacaths reduced bloodstream infections by 35% compared to Heparin plus normal saline. However our p value did not reach statistical significance (p=.12). We are writing up the study now for submission and are optimistic that a larger trial might help settle the issue.
- Ethanol should be included as one arm of the study in addition to antibiotics.

**Efficacy (or lack thereof) of antimicrobial locks:**
- The general experience with infected lines is that they remain problematic unless removed.
- [We] salvaged port or catheter about 50% of time
- It seems rarely to sterilize and pts return later with need for removal of device
- It usually works for CONS, rarely for *S. aureus*
- I am against the idea
- I have had some dialysis vascaths (2) become occluded after attempting locks so I am nervous/reluctant to do this.
- Have had good luck with using vancomycin locks for coag-negative staph.
- Our experience, conforming to the available literature, is that bad outcome is frequent when any CVC is allowed to remain in patients with presumed/documented CVC-associated BSIs due to organisms other than very drug susceptible Enterobacteriaceae or coag-neg staph.
- Seems that I have been successful in the few CNS line infections that I have used ALT for.

Appendix I
Haven't found ALT useful for catheter salvage. Using wrong agent perhaps? Dwell time usually limited by need of the line for other infusions.

I have not experienced any complications using the lock technique.

*Klebsiella* in line dependent child with no additional sites. Successfully cleared.

I have treated two patients - one with vancomycin lock and one with ethanol lock. Both cleared their infections but went on to develop distinct infections after therapy was finished. In retrospect, in both patients, I feel that extending the life of the catheter was in the patients’ best interests.

I have mainly used it for coag-negative Staph and most of my personal experience is with hemodialysis catheters. It seems to work short term the majority of the time, but as expected the catheters will often ultimately relapse or become reinfected, but sometimes not for many months, thus buying some good time for the patient.

We did not have a lot of success with ALT in children but our numbers are very small to be representative.

We have successfully treated patients who had low-virulence organisms. However, it seems that most of them get another infection (different organism) within a few months.

The times (maybe a total of 3-4 times) I have used ALT is in the setting of trying to salvage a line (host who already has had 3 or more tunneled catheters), no other systemic signs of illness, and where systemic therapy for 3-5 days have still failed to clear the infection. I rarely use ALT except in very exceptional cases. For the 1 *Candida* spp. line infection, patient was a pediatric short gut and cancer patient who had thrombosed most other vessels, it was his 5th catheter, no other access available, and he was TPN-dependent (the line was his mainstay of support) and had a hi anesthesia risk as well. Although salvage was attempted because of his overall poor prognosis, not unexpectedly, we were not successful.

Greatest benefit is with hemodialysis catheters.

Have used for difficult-to-remove/replace catheters with susceptible organisms - good short-term success

**Patient/catheter selection for antimicrobial locks:**

- We probably try to sterilize more than rarely but not often. Severity of illness, IV access and type of line make a difference. We never try to sterilize ports. We never try to sterilize if there is a tunnel cellulitis. We try oral therapy and D/C line if close to end of tx.

- Whether or not I try systemic abx depends upon how sick the child is, how long he/she has been on antibiotics, etc.

- The survey is a little hard to answer in that most children are treated empirically systemically. Once we have an idea what is going on, we can then treat more specifically. I have felt comfortable using ABL only without systemic therapy after identification of the organism and meeting a variety of standards.

- Lots of people have picc lines which are so easy to take out and replace, that we almost never try to salvage those

- More likely to use ALT when patient has "No other sites" for access

- Usually only use in long-term lines that would be a significant problem to remove - I don't bother with triple lumen catheters, piccs, etc.

- Only try to save the catheter when it's pt's last or next to last access (eg., translumbar dialysis catheter, can't get any more PICCs in for TPN in pt w/ no gut, clotted off vasculopath who still needs access)

Appendix I
• Will only start salvage therapy if line sepsis is not severe or if patient is too unstable to attempt replacement of line.
• We have a policy for additional antibiotic lock therapy (cefazolin, pip, pip-tazo, amikacin, ceftazidime, gent) - but these are extremely rarely used (to my knowledge). Nearly all salvage is directed at CoNS.

**Frequency of use of antimicrobial locks:**

• Use infrequently / on few occasions [by 6 members]
• No ALT, but considering it [by 2 members]
• I do not use ALT [by 3 members]
• I have only done this when there are no options other than to leave a catheter in, i.e., when the patient could not survive without his/her current line [by 2 members, one pediatrics]
• Try to remove line whenever possible. Use lock solutions if can't remove catheter. Very reticent to use with organisms other than CNS.
• We have only resorted to ALT on rare occasions - usually a child with limited options to replace the central catheter as in children on lifelong TPN with blockage or thrombosis at multiple previous sites.
• I have rarely used ALT only to salvage lines and my experience is only with gram positives.

**Comments about prophylactic antimicrobial locks:**

• Have used antibiotics locks primarily for prevention after treating an infection in patients with recurrent infections to attempt to keep line from being reinfected.
• Use of prophylaxis lock solutions is currently limited to high risk populations in our children's hospital. These include: heme/onc patients with indwelling lines, short gut patients on long term TPN, neonates and those with prior effectively treated infections still in need of therapy. Solutions are used any time that the line is not being used for other purposes.
• Given recent data by Wenzel et al, catheter-related infections could be completely prevented by using low-tech low-cost interventions so I don't see the use of ALT for prophylaxis as attractive.
• Using prophylaxis selectively, have not had breakthrough bacteremias arise as yet. Have <6 months experience w prophylaxis.
• We have been considering using ethanol locks on our short gut population as prophylaxis.

**Development of antimicrobial resistance:**

• The major issue is emergence of resistance in the patient and in the environment (hematology/oncology unit, NICU, etc)
• Antibiotic ALTs look good at the moment, but resistance seems forgone.
• We have seen an increase in gentamicin-resistant organisms in dialysis patients after instituting a prophylactic gentamicin-lock program for prevention of CR-BSI

**General comments**

• In the lines placed in small children, heparin or another anticoagulant is almost always used to prevent thrombosis of the lumen.
• Accidental infusion of lock solution
• Question: are all these devices comparable in terms of response rate?
• This has been a problem in our institution mainly in oncology patients

Appendix I
• Have also used linezolid/daptomycin/ampicillin lock therapy for Enterococcus/VRE line infections [by 2 members]
• We do use central lines that are antibiotic coated in some situations (see PIDJ 2007;26:816-820 for our experience at CHOP)
• Jeff Garland has published in the Neonates our experience.
• Agents and concentrations I use are above. Dwell time is 12 h with new installation if in hospital and daily otherwise if treating an infection. Try not to use the port for anything else during treatment. Truly preventive vancomycin/heparin of a port is done monthly or after each use.
• My pharmacist has most of the information. I usually have to be pushed to do. Basically this has been done in dialysis only except for one case. You didn’t give the best option – remove the line.
• You should poll your membership to see who you’re dealing with, at least for statistical reasons.
• I have heard anecdotes of folk using TPA in an infected line in the hope of clearing off small thrombi that might be serving as a biofilm. Have not tried it myself and unable to find much support in the literature, so doubt this is common practice...
• I am unsure of all of these - but I have a pdf of a Pharmacy policy that I can share if someone wants to give me an email address to send it to
• Role of daptomycin in biofilm degradation needs evaluated
• Any studies on Candida infections? Cancidas (caspofungin) is supposed to be active??
• Am intrigued by alcohol as an agent for ALT
• We have also used alcohol based locks [by 2 members].
• Attempt to save Catheter if a time-dependent antibiotic can be used by way of continuous infusion
• Had one patient where the lock solution was mixed incorrectly and the patient got too much heparin and bled.
• We are unable to do this for permacaths (used in hemodialysis) because the lines are only manipulated by dialysis nurses
• My nephrologists don't let us use them

Appendix I