

Presentation Type:

Poster Presentation - Poster Presentation

Subject Category: Microbiology

In Vitro Antimicrobial Activity of Taurolidine against Isolates Associated with Catheter-Related Bloodstream Infections

Jared Crandon, Cormedix Inc.; S.J. Ryan Arends, JMI Labs / Element; Paul Rhombert, Element Iowa City and Mariana Castanheira, Element Iowa City

Background: Taurolidine exhibits broad antimicrobial activity and is a component of a recently FDA approved catheter lock solution (DefenCath®, taurolidine 13,500 µg/mL and heparin 1000 Units/mL) indicated for reducing the risk of catheter-related bloodstream infections (CRBSI) in adult patients receiving chronic hemodialysis through a central venous catheter (HD-CVC). FDA approval was based on a Phase 3 randomized trial (LOCK-IT-100) in which DefenCath showed a 71% reduction in CRBSI risk among HD-CVC patients as compared with heparin alone. Although individual isolates from the clinical program were not available for testing, this study evaluated the in vitro antimicrobial activity of taurolidine against a set of recent clinical isolates representative of those recovered from the LOCK-IT-100 trial and/or those commonly associated with CRBSI. **Methods:** 420 bacterial and 50 yeast isolates were selected from the SENTRY Antimicrobial Surveillance Program. All isolates were collected from the bloodstream of patients in the U.S. between 2018-2023. Isolates were tested for susceptibility to taurolidine and comparators using Clinical and Laboratory Standards Institute (CLSI) broth microdilution guidelines. JMI Laboratories produced susceptibility test panels for testing. CLSI-recommended quality control strains were also tested concurrently. MIC values were determined after 24 hours. **Results:** Taurolidine exhibited broad antimicrobial activity against all isolates tested (see table). Against gram-positive bacteria, taurolidine MIC50/90 values ranged from 256-512/512-1,024 µg/mL for *S. aureus*, Coagulase-negative Staphylococcus, Enterococcus species, and Viridans group streptococci. This activity was maintained regardless of methicillin susceptibility for Staphylococcal isolates or vancomycin resistance among Enterococcal species. Against gram-negative bacteria, taurolidine MIC50/90 values ranged from 256-1,024/512-2,048 µg/mL for Enterobacterales, *P. aeruginosa*, *S. maltophilia*, *A. baumannii-calcoaceticus*, and *B. cepacia*. This activity was maintained in both multidrug resistant Enterobacterales and *P. aeruginosa* isolates. Among *Candida* isolates, taurolidine MIC50/90 values ranged from

256-512/512 µg/mL for *C. glabrata* and *C. parapsilosis* while taurolidine MIC50/90 values of 4,096/4,096 µg/mL were observed for *C. albicans*.

Conclusions: Taurolidine activity was very similar among a large collection of gram-positive, gram-negative, and yeast organisms. MIC90 values for all species/groups were ≤2,048 µg/mL, except *C. albicans* where an MIC90 of 4,096 µg/mL was observed. The activity of taurolidine was unaffected by resistance to antibiotics (i.e. methicillin, vancomycin, or multidrug resistance) among gram-positive or gram-negative organisms. Based on these data, catheter lock solutions containing the broad-spectrum antimicrobial taurolidine at 13,500 µg/mL have the potential to prevent CRBSI caused by a variety of species, including those observed in the recent LOCK-IT-100 clinical trial and other common bloodstream pathogens

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s112

doi:10.1017/ash.2024.267

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Improving Consistency and Accuracy: A Novel *C. auris* Colonization Screening Strategy Using a Nares + Hands Composite Swab

Luisa Lopez Cano, Centers for Disease Control and Prevention; Sebastian Arenas, University of Miami Health System; Adriana Jimenez, University of Miami Health System; Meghan Lyman, US Centers for Diseases Control and Prevention; Anastasia Litvintseva, US Centers for Diseases Control and Prevention; Bhavarth Shukla, University of Miami Health System and Joe Sexton, Centers for Disease Control and Prevention

Background: *Candida auris* is often identified in healthcare settings through bilateral composite of axilla/groin skin swabs screening. Re-screening the same patient has demonstrated inconsistent results over time, complicating the understanding of longitudinal colonization and limiting confidence in negative **Results:** Previous studies have described identification of colonized patients using other anatomical sites. Here, we compare bilateral composite of nares/hands with bilateral composite of axilla/groin screenings in a cohort of hospitalized patients in Miami, Florida, to assess the use of screening other body sites for *C. auris* surveillance. **Methods:** This study took place in a 560-bed academic acute-care facility and included patients previously colonized with *C. auris* who were cohorted on a 30-bed unit. Bilateral composite samples from both the axilla/groin and nares/hands were obtained simultaneously. Swabs were collected at six different time points at biweekly intervals between March and May 2023 (Figure 1) and sent to the Centers for Disease Control and Prevention for testing with culture and Real-time PCR-based

Table Distributions of taurolidine MIC values against various species/groups

Organism (No. isolates)	No. of isolates inhibited at a taurolidine MIC (100% read, µg/mL) of:							Taurolidine		
	≤32	64	128	256	512	1,024	2,048	4,096	MIC ₅₀	MIC ₉₀
<i>S. aureus</i> (76)				1	75				512	512
MSSA (37)					37				512	512
MRSA (39)				1	38				512	512
CoNS (52) ^a				10	38	4			512	512
<i>S. epidermidis</i> (36)					32	4			512	1,024
MSCoNS (21)				7	14				512	512
MRCoNS (31)				3	24	4			512	1,024
<i>E. faecalis</i> (38)				1	48	2			512	512
<i>E. faecium</i> (10)					5	5			256	512
Viridans group streptococci (18) ^b		1	2	5	10				512	512
Enterobacterales (136)			1	22	105	8			512	512
MDR Enterobacterales (19)				1	16	2			512	1,024
<i>E. coli</i> (43)				1	42				512	512
<i>K. pneumoniae</i> (43)				2	38	3			512	512
<i>P. mirabilis</i> (10)					10				256	256
<i>E. cloacae</i> sc (10)					6	4			512	1,024
Citrobacter species (10)				9	1				256	256
<i>S. marcescens</i> (20)			1		18	1			512	512
<i>P. aeruginosa</i> (45)					20	23	2		1,024	1,024
MDR <i>P. aeruginosa</i> (10)					8	2			512	1,024
<i>S. maltophilia</i> (15)				12	2	1			256	512
<i>A. baumannii-calcoaceticus</i> sc (15)				2	13				512	512
<i>B. cepacia</i> sc (15)				10	1	2	2		256	2,048
<i>C. albicans</i> (17)							5	12	4,096	4,096
<i>C. glabrata</i> (17)				3	13	1			512	512
<i>C. parapsilosis</i> (16)				3	9	4			256	512

MSSA, Methicillin-susceptible *S. aureus*; MRSA, Methicillin-resistant *S. aureus*; CoNS, coagulase-negative Staphylococcus; sc, species complex; MDR, Multidrug resistant
^a Species include: *Staphylococcus capitis* (2), *S. epidermidis* (36), *S. haemolyticus* (2), *S. lugdunensis* (10), and *S. saprophyticus* (2).
^b Species include: *Streptococcus anginosus* group (2), *S. bovis* group (5), *S. gallolyticus* (2), *S. mitis* group (2), *S. salivarius* group (2), and *S. sanguinis* (5).

Figure 1. Collection methods

