Standard vs Alternative Therapy for *Stenotrophomonas maltophilia* Infections: Focus on Trimethoprim-Sulfamethoxazole, Minocycline, and Moxifloxacin Monotherapy

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Background

- *Stenotrophomonas maltophilia* is a gram negative bacilli associated with severe nosocomial infections[1]
- Diagnosis can be difficult as it can present as a colonizer and/or in polymicrobial infections[1]
- *S. maltophilia* is inherently resistant to many antibiotics which limits treatment options
- Antibiotics with reliable in-vitro activity include trimethoprim-sulfamethoxazole (TMP-SMX), minocycline, moxifloxacin, and levofloxacin[2]
- Use of TMP-SMX may be limited due to allergy, intolerance, adverse effects, or resistance
- Use of minocycline has increased after a recent retrospective study found that there was no significant difference in treatment failure among patients who received TMP-SMX vs minocycline for *S. maltophilia* infections[3]
- There are no retrospective or prospective clinical studies assessing the use of moxifloxacin for such infections

Methods & Study Design

- Purpose: to compare the clinical efficacy of TMP-SMX, moxifloxacin, and minocycline monotherapy for treatment of *S. maltophilia* infections
- Single-center, retrospective chart review
- University Hospital, San Antonio, Texas
- Only first incidence of S. maltophilia included in the analysis
- Timeline: January 2006 – September 2017

Inclusion	Exclusion
≥ 18 years old	Incarcerated
Isolated ≥ 1 positive culture with *S. maltophilia*	Pregnancy
Treatment with one of three agents of interest ≥ 5 days	Cystic fibrosis
	Death within 48 hours
	Concurrent antimicrobials with in vitro activity against *S. maltophilia*

Outcomes

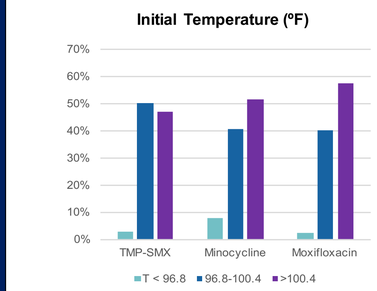
Primary	Secondary
Clinical success 1. Resolution of signs and symptoms of infection • Temperature 96.8 – 100.4 F • WBC 4000-12000 cells/mm^3 • Improvement in pre-treatment signs and symptoms 2. No *S. maltophilia* isolated 30 days after end of therapy 3. No switch to alternative antibiotics (with *S. maltophilia* coverage) due to adverse effects or clinical worsening	• Development of adverse effects • In-hospital mortality and 30-day mortality • Length of hospital stay • Development of resistance

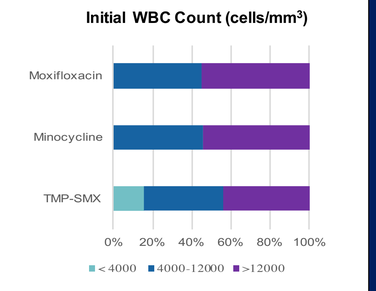
Results

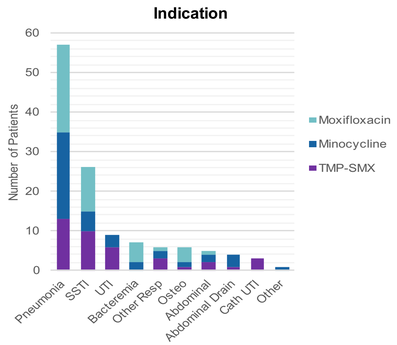
TMP-SMX n = 32 | Minocycline n = 37 | Moxifloxacin n = 40

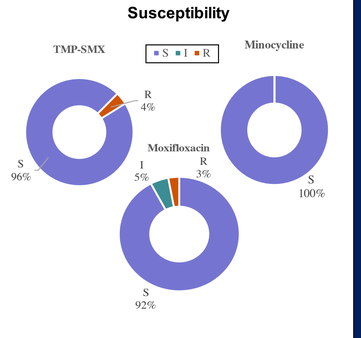
Baseline Characteristics

	TMP-SMX	Minocycline	Moxifloxacin	p-value
Age, yrs*	52.5 (40-63)	62 (47-67.5)	52.5 (37-60)	0.1036
Male, n (%)	16 (50)	25 (67.6)	29 (72.5)	0.1231
ICU, n (%)	25 (78.1)	27 (73)	29 (72.5)	0.8406
SOT, n (%)	2 (6)	8 (13)	5 (6)	--
Prior hosp, n (%)	17 (54)	20 (38)	15 (53)	--
CCI*	3 (1-5)	5 (2-7)	2 (1-5)	0.0329
10-yr survival %*	77 (21-97.5)	21 (0-90)	90 (21-96)	0.0344









* = median (IQR), SOT = solid organ transplantation, hosp = hospitalization, CCI = charlson comorbidity index, SSTI = skin and soft tissue infection, UTI = urinary tract infection, osteo = osteomyelitis, cath = catheter, LOS = length of stay, EOT = end of therapy, AKI = acute kidney injury, S = susceptible, I = intermediate, R = resistant

Primary Outcome

	TMP-SMX	Minocycline	Moxifloxacin	p-value
Complete (3/3), n (%)	14 (43.8)	17 (46)	16 (40)	0.8674
Partial (2/3), n (%)	29 (90.6)	35 (94.6)	34 (85)	0.3724

** No statistically significant difference with efficacy parameter breakdown **

Secondary Outcomes

	TMP-SMX	Minocycline	Moxifloxacin	p-value
In hosp mortality, n (%)	4 (12.5)	2 (5.4)	6 (15)	0.3850
30 day mortality, n (%)	3 (9.4)	2 (5.4)	4 (10)	--
LOS, days*	24.5 (12.5-39.25)	18 (11-38.5)	41.5 (16.25-68.5)	0.0340
ICU days – overall*	8.5 (1-22)	10 (10-23)	16 (0-35.75)	0.8406
ICU days – one-way*	n = 25 14 (4-27)	n = 27 14 (5-27)	n = 29 23 (15-57)	0.0114
Resistance during tx, n(%)	0	1 (2.7)	3 (7.5)	0.2257
Resistance 30 days after EOT, n (%)	n = 29 0	n = 36 0	n = 37 4 (10.8)	0.0258

Adverse Effects	TMP-SMX	Minocycline	Moxifloxacin
	• 11/32 (34.4%) • AKI (n = 6)	• 2/37 (5.4%) • Thrombocytopenia (n = 1)	• 7/40 (17.5%) • QTc prolongation (n = 3)

Conclusions

- Unable to detect a significant difference in complete or partial clinical success between all 3 groups
- Limited conclusions can be drawn about differences in secondary outcomes due to small sample size
- Additional prospective studies would be beneficial

References

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3. Hand E, Davis H, Kim T, Duhon B. Monotherapy with minocycline or trimethoprim/sulfamethoxazole for treatment of Stenotrophomonas maltophilia infections. J Antimicrob Chemother. 2016;71(4):1071-5.

The authors of this study have nothing to disclose
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IDWeek 2018 ❖ San Francisco, CA ❖ October 3-7 2018