Results: Significant decreases in DOT were observed for piperacillin/tazobactam (29.88 vs. 9.25; p < 0.001), ciprofloxacin (23.22 vs. 9.97; p < 0.001), levofloxacin (11.2 vs. 5.07; p < 0.001) and overall antipseudomonal DOT (62.91 vs. 51.67; p < 0.001). There was no difference in ceftazidime DOT (8.75 vs. 6.47; p= 0.083) and an increase in cefepime DOT (20.47 vs. 34.35; p < 0.001). A trend towards decreased rates of CDI was seen (4.9/10,000 patient days vs. 2.64/10,000 patient days; p= 0.931). There were significant decreases in antibiotic expenditures for piperacillin/tazobactam ($52,498 vs. $10,937; p < 0.001), levofloxacin ($2,168 vs. $672; p < 0.001), ciprofloxacin ($6,700 vs. $1,954; p < 0.001). Lower expenditures for ceftazidime were seen ($9,952 vs. $7,457; p= 0.29). Cefepime expenditures increased ($25,638 vs. $40,097; p= 0.001). An overall decrease in the expenditure for the targeted antibiotics was seen ($95,715 vs. $62,837; p < 0.001).

Conclusion: Implementation of a staff pharmacist-driven prospective authorization and feedback program led to a significant decrease in DOT and antibiotic expenditures for several targeted antibiotics and a trend towards decreased rates of CDI. Despite increased DOT and expenditures for cefepime, there was an overall decrease amongst the targeted antibiotics. With proper implementation, staff pharmacists can significantly benefit antimicrobial stewardship initiatives.

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84. T2Candida Panel Use Evaluation: a Quality Improvement Project

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Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Invasive candidiasis is a life-threatening infection with 40% mortality despite antifungal therapy[1]1. T2Candida uses T2MR technology to detect the 5 most common *Candida* species direct from whole blood within 3 to 5 hours, guiding rapid appropriate antifungal use. In our institution the test required ordering approval and questions assessing the risk of candidemia were built into the electronic medical record. The aim of this study was to assess test utilization and the impact of results on antifungal use.

[1] Clancy et al.; Finding the "Missing 50%" of Invasive Candidiasis: How Nonculture Diagnostics Will Improve Understanding of Disease Spectrum and Transform Patient Care; *Clin Infect Dis*. 2013 May;56(9):1284–92.

Methods: A retrospective chart review of results from our T2Candida Panels from March 2019 to March 2020 was conducted. We compared demographics, co-morbidities, days of antifungal use, length of stay (LOS) and mortality in patients with positive and negative assays.

Results: 271 assays were performed, 27 were positive and were compared to 81 negatives. Baseline demographics and co-morbidities were similar in both groups. All patients tested had >1 risk factor for candidemia.

78% were positive for *C. albicans/C. tropicalis* and 11% positive for *C. glabrata/C. krusei* and *C. parapsilosis* respectively. Blood cultures were positive in 8 individuals, of which 5 had a positive assay; among the other 3, one grew *C. auris*. All species in the T2Candida matched the blood cultures when available.

β-D-glucan was positive in 82% of patients with positive T2 results vs 46% in the T2 negative group (p = 0.016).

Antifungal administration within the time of assay collection was 54% in the negative group vs 74% in the positive group (p = 0.030). Mean duration of antifungal use were significantly lower in the negative group than the positive group (5.98 vs 17.55 days, p = 0.04).

Demographics and Comorbidities

Demographics and Comorbidities			
Factor	T2Candida Positive	T2Candida Negative	p value
Age	55.22	59.00	0.172
Male	15 (56)	61 (56)	0.466
Central Vascular Access	23 (85)	59 (73)	0.077
TPN[1]	10 (37)	19 (24)	0.087
History of Organ Transplant and/or LVAD[2]/TAH[3]	6 (22)	20 (25)	0.398
History of Abdominal Surgery or Perforation[4]	5 (19)	11 (14)	0.283
Neutropenic Fever	4 (15)	9 (11)	0.319
HIV[5]	0 (0)	10 (12)	0.106
Antifungal Administration	20 (74)	44 (54)	0.030
Antibiotic Administration	25 (93)	78 (96)	0.255

[1] Total Parenteral Nutrition
[2] Left Ventricular Assist Device
[3] Total Artificial Heart
[4] Within the prior 28 days
[5] Human Immunodeficiency Virus

Outcomes

Outcomes	T2Candida All N = 108 (%)	T2Candida Positive N = 27 (%)	T2Candida Negative N = 81 (%)	p value
Mortality	45 (42%)	11 (41%)	34 (42%)	0.456
ICU Admission	62 (57%)	14 (52%)	49 (60%)	0.223

	Mean Days			
Outcomes	T2Candida All	T2Candida Positive	T2Candida Negative	p value
LOS	45.19	46.41	44.78	0.450
ICU LOS	14.48	9.36	15.98	0.156
Antifungal days	9.59	17.55	5.98	0.004

Cultures

Cultures		
Blood Cultures		
Patient	T2Candida Positive	T2Candida Negative
1	C. tropicalis	
2		C. auris
3		C. albicans
4	C. albicans	
5	C. albicans	
6	C. glabrata	
7	C. glabrata	
8		C. albicans
Sterile Cultures		
Patient	T2Candida Positive	T2Candida Negative
9	C. albicans [1]	
10	C. glabrata [2]	
11		C. glabrata [3]

[1] Intraabdominal abscess
[2] Peritoneal fluid
[3] LVAD graft

Conclusion: T2Candida was an effective diagnostic and antimicrobial stewardship tool, leading to testing in high risk patients and reducing unnecessary antifungal use. Additional education is required for improved ordering of concurrent blood cultures. Negative results should be interpreted with caution in suspected invasive candidiasis with consideration for species not included in the panel.

Disclosures: **All Authors**: No reported disclosures

85. The Impact of Carbapenem-Sparing Interventions on the Evolution of Resistance in Pseudomonas aeruginosa in the USA

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Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Carbapenem resistance (CR) among *Pseudomonas aeruginosa* infections is a pressing public health concern in the United States. Therapeutic alternatives for CR infections are limited. Implementation of a key antimicrobial stewardship intervention such as formulary restriction, which is one of the many stewardship strategies, can minimize selection pressure for resistance. We evaluate the consequent impact of this intervention on bacteremia patients infected with *P. aeruginosa* in the US.

Methods: We developed a population-genetic model of selection for CR. Increases in CR were modeled as a consequence of inappropriate prescription. Inappropriate empiric therapy, i.e. antibiotic, did not cover the organism or appropriate coverage not started within 2-days, was estimated from a published study and future projections were based on historical resistance frequencies and yearly carbapenem consumption associated with *P. aeruginosa* bacteremia. We projected peak *P. aeruginosa* CR frequencies and cumulative CR cases from 2020–2040. We compared scenarios without carbapenem restriction to usage decreased linearly by an amount demonstrated in a previous hospital study (51.7%) over 5 years of implementation starting in 2020 (early implementation) or 2030 (late implementation).

Results: Early and late implementation of carbapenem restriction leads to CR frequencies that ascend as high as 42% and 74% respectively eventually mitigating those frequencies by bringing them down to 23% and 37% respectively. By 2045, early carbapenem restriction could prevent 29,600 CR cases of *P. aeruginosa* bacteremia, compared to 15,200 prevented by late implementation.

Conclusion: We demonstrate that early restriction of carbapenem consumption could markedly reduce future CR in *P. aeruginosa* bacteremia patients. Implementing early carbapenem restriction should be expected to result in a lower ultimate frequency of CR and a lower number of cumulative cases of resistant infections, thereby decreasing the overall burden of CR cases that will be encountered in the future.

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