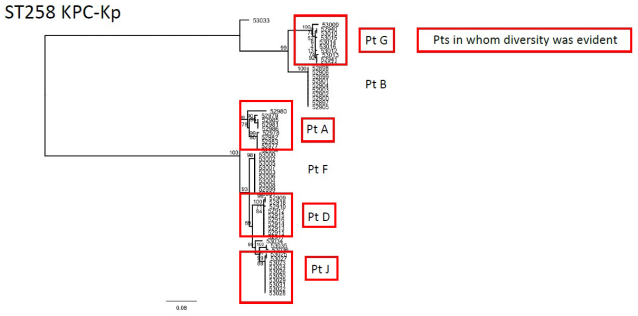
chosen for Illumina whole-genome sequencing. Strains from 3 patients were tested for *in vitro* phenotypes and virulence in mice.

Results. Patients had BSIs due to ST258 K. pneumoniae (Kp; 6), non-ST258 Kp (3), and K. michiganensis (Km; 1). 5 patients were infected with strains that differed by core genome single nucleotide polymorphism phylogeny (2–5 unique genotypes/patient) [figure]. 6 patients were infected with strains that differed by gene or plasmid content, and/or gene deletions [table]. Differences in individual patients encompassed antibiotic resistance and putative virulence genes (including mixtures of bla_{KPC}+ and bla_{KPC}– strains, and various capsular (CPS) and porin mutant strains). In total, BSIs in 8 of 10 patients were caused by a genotypically diverse population. In each of 3 patients, genotypically diverse ST258 Kp strains demonstrated significant differences in antibiotic susceptibility, CPS content, mucoviscosity, adherence, resistance to serum killing, and mortality rates and tissue burdens during BSIs of mice. ST258 strains from a pt with and without a KPC-bearing IncFIA plasmid differed in β-lactam susceptibility, but were equally virulent. Progressive loss of CPS in ST258 strains from another patient enhanced serum killing and adherence, and attenuated virulence. Using PCR markers to test 96 colonies per positive BC bottle, we demonstrated that strains selected by the clinical micro lab accounted for 2% to 98% of a population in different patients.

Conclusion. CRK causing BSIs in most patients demonstrated remarkable genotypic diversity, which impacted antibiotic susceptibility, virulence and other phenotypes. Differences were not recognized during hospitalization since clinical labs select single, morphologically distinct colonies for evaluation. Studies are needed to understand the clinical implications of our findings, diversity during other BSIs, and whether clinical lab practices need revision.

Phylogenetic trees, core genome SNPs



Non-ST258 gene disruptions, deletions and plasmid loss

Pt	ST and sp. (KPC)	N distinct strains	Strain(s)	Distinguishing features (compared to other strains from same patient)
C	Kp, ST1662 (N/A)	4	C1, C10	ompK35 STOP 89; ompK36 promoter insertion
			C5	ompK35 wild-type; ompK36 STOP 293
			C9	ompK35 STOP 89; ompK36 insertion Ecp1
			Others	ompK35 STOP 89; ompK36 STOP 293
E	Kp, ST268 (KPC3)	3	E1	Carries MsrE (ABC subfamily), MphE (macrolide resistance), OXA23, OXA82
			E7	Carries colRNAi plasmid
			Others	Missing MsrE, MphE, OXA23, OXA82, colRNAi
I	Kp, ST76 (N/A)	3	I5	Carries OXA23. Missing mrkB, F (fimbrial adhesin genes)
			I6	Missing OXA23, mrkB, F, J
			Others	Missing OXA23. Carries mrkB, F, J.
H	Km (N/A)	1		

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247. Evaluation of the T2Candida Panel as an Antifungal Stewardship Tool in Transplant and Non-Transplant Patients at a Tertiary Care Center

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Session: 40. Fungal Diagnostics

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Background. Invasive candidiasis (IC) has a mortality of >30% and likelihood of death increases 50% each day antifungal therapy (AF) is delayed. In patients with suspected IC early empiric AF improves outcomes but has the potential for overuse. Blood cultures (BC) detect ~50% of candidemia with a turn-around-time (TAT) of 2–5 days. T2Candida Panel (T2) an FDA-approved molecular diagnostic test, detects 5 Candida species directly in blood with specificity 99.4%, sensitivity 91.1%, and TAT of 3–5 hours. Our institutional guidelines permit the use of empiric AF in patients with suspected IC (Figure 1). We evaluated the utility of T2 as an AF stewardship tool to support these guidelines.

Methods. We reviewed patients that had T2 done January 2016 to May 2016 at Henry Ford Hospital, a 900-acute care bed teaching hospital in Detroit, MI. Patients with negative T2 [T2(–)] and negative concurrent BC [BC (–)] were evaluated. The primary endpoint was discontinuation (d/c) of AF after a T2 (–) result. Secondary endpoints were candidemia after d/c of AF and all-cause 30-day mortality. Comparative analyses were performed of transplant (txp) vs. non-transplant (non-txp) patients. Univariate analysis was done to determine the association of risk factors and outcomes. Multivariate regression using forward selection was used to model mortality risk. Time to d/c of AF were modeled using Kaplan–Meier estimators.

Results. 500 consecutive patients with T2 (–) and BC (–) results were identified. Patients on AF for prophylaxis or treatment of fungal infection were excluded. 472 patients (93 txp patients) were included in the analyses. Characteristics of the txp and non-txp patients are in Table 1. Median TAT in hours (hr) of T2 was 6 (±2) vs. 123 (±25) for final BC (–) result. 264/472 (56%) patients were initiated on empiric AF. In patients with T2 (–) result, AF were d/c within 7 days in 97%; time to d/c of AF was 72 hr in 50% txp patients and 48 hr in 50% of non-txp patients respectively (Figure 2). No episodes of candidemia were diagnosed after d/c of AF. All-cause mortality was lower in txp patients (14%) vs. non-txp patients (34%) ($P = 0.0002$). Likelihood of mortality did not increase after d/c of AF (OR1.3, 95% CI 0.913–2.064).

Conclusion. T2 promotes d/c of empiric AF in txp and non-txp patients with suspected IC without a negative impact on clinical outcomes.

Table 1: Characteristis of Study Population

Variables	Non-Transplant (N=379)	Transplant (N=93)	P value[1]
Demographics			
Age in Years (Mean, SD)	54, 14	54, 14	0.1002
Male (%)	49.3%	54.8%	0.3418
Race:			
White	56%	75.3%	0.0068
Black	32.3%	20.4%	
Asian	2.13%	1.1%	
Other	9.6%	3.2%	
Clinical characteristics			
Renal Failure	56.5%	67.7%	0.0478
HIV	2.13%	3.23%	0.2894
Malignancy on chemotherapy	11.2%	28%	<.0001
Antibiotics ≥48hrs preceding test	97.87%	96.77%	0.4632
Fever/hypothermia (Tmax >38 or <36 °C)	41.87%	35.48%	0.2619
Neutropenia (ANC < 1000 cells/cc)	5.9%	16.1%	0.001
Severe Sepsis[2]	22.7%	20.4%	0.6424
Vasopressor Required	27.5%	16.1%	0.0242
Ventilator Required	69.7%	30.1%	<.0001
Presence of CVC	49.6%	35%	0.0146
Presence of prosthesis or ICD	5.8%	7.5%	0.5354
TPN	24%	19.8%	0.3921
Tube Feeding	51.5%	30.8%	0.0004
Surgery	46.1%	38.5%	0.1866
Abdominal Infection	8%	0%	0.0053
GI perforation	8.5%	3.3%	0.0891
Abscess	4.55%	1.08%	0.1429
Candida Score[3] (Mean, SD)	1.14, 1.05	0.98, 0.99	0.1736
Candidemia Risk High (Score ≥3)	10%	4.3%	0.0823
ICU location	88%	52.2%	<.0001
ID consult	67.55%	76.34%	0.0994
Outcomes			
Antifungal started	53.3%	66.67%	0.0200
Antifungal discontinuation after negative T2	52.51%	64.52%	0.0370
All-cause 30 day mortality	34%	14%	0.0002

[1]p<0.05 significant; [2]Severe sepsis: at least 2/4 SIRS criteria with multi-organ dysfunction or vasopressor support; [3]Candida Score: Severe sepsis=2 points, TPN, surgery, multifocal Candida colonization each=1 point (Leon C, et al. 2006)

Figure 1
Algorithm for use of empiric antifungal therapy for patients with suspected invasive candidiasis and candidemia

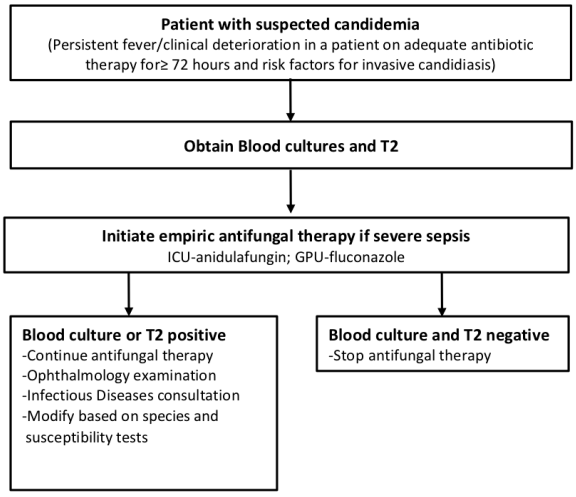
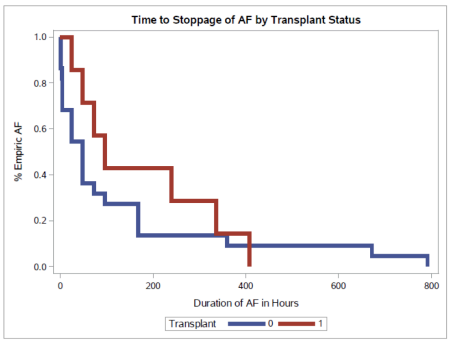


Figure 2:



Disclosures. **All authors:** No reported disclosures.

248. Thirty-Day Mortality Among Patients with Candidemia Diagnosed by T2Candida Assay Alone: Influence of Risk Factors and Candida Species

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Background. Candidemia is a common cause of healthcare-associated bloodstream infection with high mortality rates despite antifungal therapy. Risk factors include prolonged ICU stay, immunosuppression, and exposure to broad-spectrum antibiotics. Blood cultures (BC) remain the gold standard for diagnosis but lack sensitivity and can take days to result. T2Candida (T2C) is a rapid diagnostic test utilizing PCR and magnetic resonance technology to detect five *Candida* species in whole blood in less than 6 hours. In this study we examined characteristics of patients with positive T2C assays in the absence of positive BC including risk factors and 30-day mortality rates.

Methods. We conducted a retrospective analysis of positive T2C cases at UAB Medical Center from 2016 to 2018 with either negative or no BC. For each patient we determined if clinical signs (e.g., hypotension, leukocytosis) and risk factors for candidemia were present at the time of collection. Our primary outcome of interest was 30-day mortality. Data were compared by multivariate analysis.

Results. A total of 173 patients with T2C positivity alone were included in the analysis. The most common risk factor was the use of broad-spectrum antibiotics followed by CVC (Table 1). The mean number of risk factors per patient was 3.6 (Figure 1). Overall 30-day mortality was 41%. Patients with a T2C result of *C. albicans*/*C. tropicalis* were almost 2.5 times more likely to die at 30 days (aOR 2.401, CI 1.159–4.974) compared with those with other positive results. Increasing number of risk factors (aOR 1.457, CI 1.126–1.886) and increasing age (aOR 1.052, CI 1.026–1.079) were significantly associated with increased odds of death at 30 days (Table 2).

Conclusion. In this study we demonstrate a significant association between increasing number of risk factors, older age, and *A*/*T* result with higher odds of 30-day mortality among patients with T2C positivity alone. While concern for false-positives exists when using T2C, our data suggest that this is an acutely ill population which warrants early and aggressive antifungal therapy. The lower limit of detection of T2C (1 cfu/mL) as compared with BC may explain lack of paired positive cultures in these patients despite clinical signs of and risk factors for candidemia.

Table 1. Demographics and risk factors

Age – yr.	
Mean (SD)	54.1 (15.8)
Median (IQR)	58 (22)
Range	19 - 86
Gender – no. (%)	
Male	107 (62)
Female	66 (38)
Race or ethnic group – no. (%)	
White	101 (59)
Black	66 (38.6)
Hispanic	1 (0.5)
Other	3 (1.8)
Location type – no. (%)	
ICU	112 (65)
Floor	61 (35)
T2C result – no. (%)	
C. albicans/C. tropicalis	74 (42.8)
C. parapsilosis	67 (38.7)
C. krusei/C. glabrata	17 (9.8)
Polyfungemia	15 (8.7)
Clinical signs – no. (%)	
Fever/hypothermia	112 (65)
Leukocytosis	109 (63)
Hypotension	97 (56)
Risk factors – no. (%)	
Broad-spectrum antibiotics	149 (86)
Central venous catheter	132 (76)
ICU >72 hrs.	90 (52)
Mechanical ventilation	75 (43)
Steroids/immunosuppression	74 (43)
Dialysis	47 (27)
Intra-abdominal surgery	30 (17)
Total parenteral nutrition	19 (11)
Necrotizing pancreatitis	2 (1)

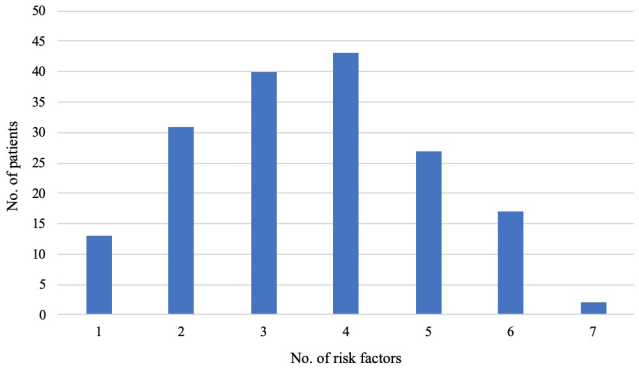

Figure 1. Number of risk factors per patient

Table 2. Multivariate analysis of factors associated with 30-day mortality

Variable	aOR (95% CI)	P-value
Sum of risk factors	1.457 (1.126-1.886)	0.004
Age	1.052 (1.026-1.079)	<0.001
A/*T* positive	2.401 (1.159-4.974)	0.018
Gender	0.920 (0.447-1.895)	0.822

Disclosures. **All authors:** No reported disclosures.

249. Limited Diagnostic Utility of Extended Aerobic Blood Culture Incubation for Fungal Pathogen Detection

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Session: 40. Fungal Diagnostics

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Background. Blood cultures are an important diagnostic tool for the detection of fungemia. At our institution, fungal blood cultures consist of aerobic blood culture with incubation extended from the standard 5 days to 14 days. Orders for fungal blood cultures exist in multiple electronic order sets for selected populations, including oncology and bone marrow transplant services.

Methods. To determine the yield of fungal blood cultures at our institution, a 570-bed tertiary-care referral center, we extracted all fungal blood culture results over a 4.5-year period (January 1, 2014–May 15, 2018) from a Laboratory Information System.

Results. Of the 21,657 fungal blood cultures performed, only 202 (0.9%) demonstrated growth and 189 (0.9%) grew fungal organisms. The majority (90%, $n = 182/202$) of positive fungal blood cultures grew a *Candida* or other yeast species. 96% ($n = 174/182$) of the fungal cultures that grew yeast would have been detected with standard bacterial blood culture. Eight of these cultures became positive during the extended hold period and grew a *Candida* species. All 8 cultures were collected from patients who had previous positive cultures for the same *Candida* species detected by standard incubation. Five fungal blood cultures from 4 patients turned positive after 5 days of incubation. Among these, two additional fungal pathogens were identified including 2 cases of *Lomentospora prolificans* and 2 cases of *Fusarium*. In both cases of *L. prolificans* and one case of *Fusarium,* the patients had previous positive blood cultures that detected the same organism with standard incubation. One patient with *Fusarium* had no previous positive blood cultures, but had multiple tissue cultures positive for *Fusarium.* The remaining cultures that turned positive after 5 days of incubation contained bacterial organisms, a number of which were considered clinically insignificant (e.g., *Cutibacterium* species).

Conclusion. These data suggest that extended incubation of aerobic blood culture bottles has limited diagnostic utility beyond standard bacterial blood culture for detection of fungemia. Fungal blood cultures represent an opportunity for improved diagnostic test stewardship, and use should be restricted to selected situations in consultation with Infectious Diseases or Laboratory Medicine.

Disclosures. **All authors:** No reported disclosures.

250. Comparison of T2Candida Assay with Blood Culture, Candida Sepsis Score and Serum β-D-glucan in Diagnosis of Candidemia

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Background. Although blood cultures are the clinical diagnostic standard for candidemia, their delay in results and low sensitivity has lead to increasing the use of alternate tests and diagnostic algorithms. The T2Candida magnetic resonance assay