Utilization of the T2 Candida Panel for rapid Candida species detection in a large community hospital

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Background

- The CDC states that candidemia carries a 35% mortality rate and is the 4th leading hospital-acquired bloodstream infection
- Blood cultures take 2-6 days to result and fail to identify 40-50% of Candida infections
- The T2 Candida Panel is a diagnostic test which utilizes whole blood to provide rapid (3-5 hours) species-specific detection of fungal pathogens
- The test detects five species of Candida (C.albicans, C. tropicalis, C. parapsilosis, C. krusei, and C. glabrata)
- T2 is also designed to provide:
  - 96.4% sensitivity and 99.4% specificity
  - Accurate results even with current antimicrobial therapy
  - Limits detection as low as 1 CFU/mL
- Use of this panel could enable clinicians to initiate anti-fungal treatment quicker, deescalate therapy faster, and possibly decrease mortality

Purpose

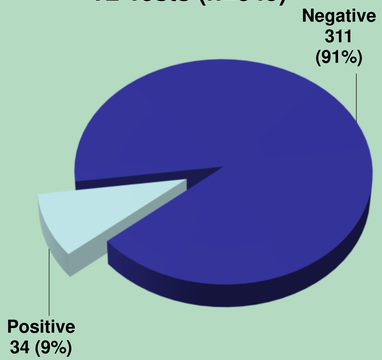
Continued evaluation of the utilization of T2 Candida Panel in a large community hospital

Methods

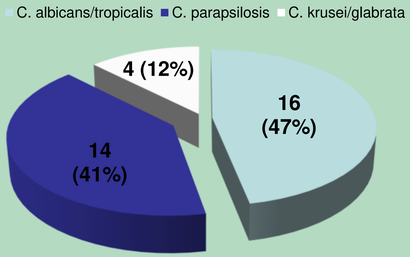
- The T2 Candida Panel was restricted to two specialty departments, Infectious Disease (ID) and Oncology for use in specific patient populations
- Patient populations included:
  - Patients with febrile neutropenia without observed cause
  - Patients in the ICU for at least 72 hours, central venous line and unexplained fever, use of broad spectrum antibiotics, in addition to one of the following:
    - Acute pancreatitis, recent major surgery, total parenteral nutrition (TPN), neutropenia, renal/hepatic failure, corticosteroids
  - Patients with central venous line and unexplained fever, sepsis
- Endpoints were defined as medication use, patient characteristics and risk factors, T2 Candida Panel results, corresponding blood cultures, time to de-escalation, and duration of therapy (DOT)

Results

T2 Tests (n=345)

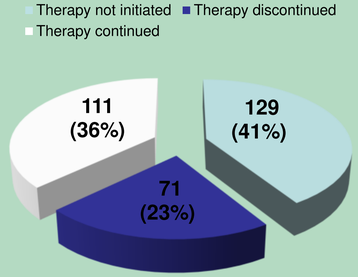


Positive T2 Results (n=34)



* 3 patients were positive for both C. albicans/tropicalis and C. parapsilosis and 1 patient had both C. parapsilosis and C. krusei/glabrata.

Negative T2 Results (n=311)

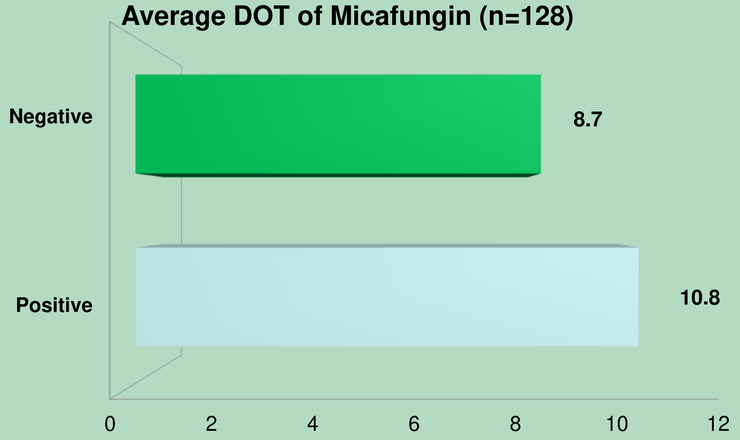


Evaluation of True Positives

	T2 (+)	T2 (-)
Blood Culture (+)	8	2
Blood Culture (-)	26	309

- Blood cultures identified 2 cases of fungal infections that were not detected by T2
- T2 identified 26 cases of fungal infections that were not detected by blood cultures
- T2 demonstrated a sensitivity similar to that found in published studies (94.4%)

Average DOT of Micafungin (n=128)



Discussion

- T2's sensitivity claim of 96.4% and it's superiority claim over blood cultures received FDA approval in 2015
- Of the patients with a positive T2 result 8/34 (24%) had a positive corresponding blood culture
- 129/311 (41%) of patients were able to avoid antifungal therapy initiation based on negative T2 results
- Negative T2 tests resulted in discontinuation of antifungal therapy in 71/311 (23%) of patients
- Two negative T2 results had a corresponding positive blood culture
- Of 36 true positives, T2 detected 34 (94.9%) positive results
- 111/311 (36%) antifungal regimens were not discontinued despite a negative T2 result
- 83/345 (24%) T2 results did not have a concurrently drawn blood culture
- Average time to de-escalation was 40.8 hours
- Negative T2 results decreased average duration of therapy of micafungin by 2.1 days.

Conclusions

- At our facility the T2 Candida Panel demonstrated greater sensitivity to Candida infection and produced results much quick when compared to blood cultures
- Despite the test's rapid nature and high sensitivity, time to de-escalation remains at 2 days suggesting variations in physicians' utilization of T2 test results

References

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The authors have nothing to disclose.