

MICU Clinical Utilization of the T2Candida® Panel at a US Hospital



Patient Selection Criteria¹

Risk of invasive candidiasis across populations

Risk	Patient examples	Type of disease	Incidence	PPV	NPV
Low	<ul style="list-style-type: none"> Any hospitalized patient w/ a blood culture Residence in the ICU without further risk stratification Residence in the ICU post-cardiothoracic surgery 	Candidemia	<1%	8%	>99%
Low-to-moderate	<ul style="list-style-type: none"> Peritoneal dialysis with peritonitis Uncomplicated liver transplant recipient 	Deep-seated candidiasis	3 – 6%	7 – 14%	99%
	<ul style="list-style-type: none"> Presence of septic shock ICU residence for ≥ 4 days 	Candidemia	3 – 7%	21 – 40%	99%
Moderate	<ul style="list-style-type: none"> Liver transplant recipient + other risk factors for IC 	Deep-seated candidiasis	5 – 20%	12 – 40%	98%
	<ul style="list-style-type: none"> ICU residence for ≥ 4 days + other risk factors for IC 	Candidemia	10 – 15%	50 – 61%	98%
High	<ul style="list-style-type: none"> Severe acute or necrotizing pancreatitis Liver transplant recipient with bile leak Recurrent GI track leak requiring surgery 	Deep-seated candidiasis	20 – 40%	40 – 64%	84 – 93%

T2Dx® Instrument



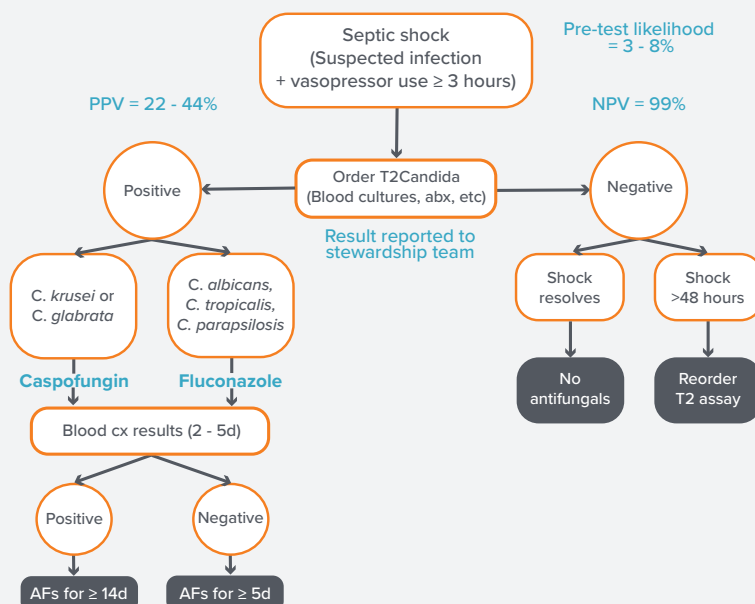
- LoD as low as 1 CFU/mL
- Easy to operate
- Minimal hands-on time
- Results in 3 to 5 hours

T2Candida Panel

91.1% Sensitivity²
99.4% Specificity²

- *Candida albicans*
- *Candida tropicalis*
- *Candida krusei*
- *Candida glabrata*
- *Candida parapsilosis*

MICU Pilot Algorithm¹



Contact us to learn more about T2Candida
info@t2biosystems.com
 or visit
t2biosystems.com



Case Study 1:

73 y/o man with ulcerative colitis admitted to the ICU with small bowel obstruction

- Extensive lysis of adhesions, right hemicolectomy, small bowel resection, and ileostomy
- Clinically stable until hospital day 8 when he developed new fevers and hypotension
 - Started empirically on cefepime, metronidazole, and vancomycin
- Hospital day 10 – worsening sepsis, requiring vasopressors
 - CT scan shows free air and fluid collections
 - Ex-lap for exploration, drainage of ascites, and resection of abdominal wall (peritoneal fluid and tissue sent for culture)
- Hospital day 11 – no improvement, increasing vasopressors
 - Caspofungin started empirically 11/18/18 at 1:24AM
 - Blood cultures and T2Candida ordered per protocol on 11/18/18 at 10:31AM
 - T2Candida reported as positive for *C. albicans/C. tropicalis* at 2:45PM
 - Blood cultures finalized as negative x 5 days on 11/23/18
- What is the next step?
 - T2 (+) provides a PPV ~20 – 30%
 - Does this patient need definitive treatment?
- New information available
 - Peritoneal fluid and tissue cultures grow *C. albicans*, reported 11/20/18 9:48AM

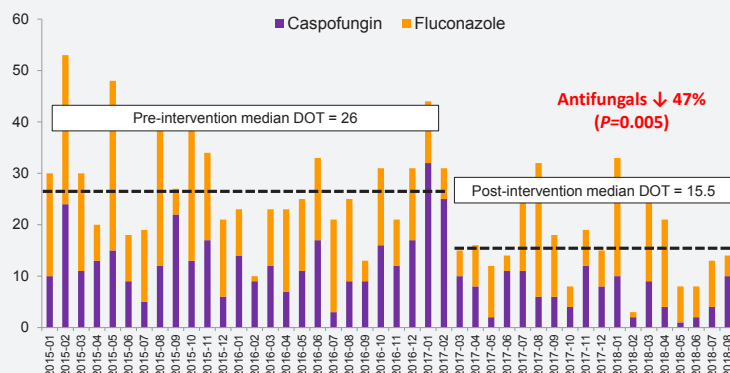
Case Study 2:

74 y/o woman presenting from OSH with ARDS and septic shock secondary to pneumonia

- Initially presented to OSH w/ fever and cough
- Empirically treated with azithromycin, piperacillin/tazobactam, and vancomycin
- Intubated and sedated due to respiratory failure
- Blood cultures grew *S. pneumoniae* → changed to amp/sulbactam + azithromycin
- On hospital day 3 (10 overall), she became febrile (38.1°C), tachycardic and hypotensive requiring norepinephrine 0.2mcg/kg/min
 - Blood cultures and T2Candida sent per protocol 1/30/19 11:09AM
- Stewardship team received a call at 3:15PM that T2Candida was positive for *C. albicans/C. tropicalis*
- Patient received first dose of caspofungin at 3:44PM (4 hours and 35 minutes after BCx)
- Blood cultures turned positive for *C. albicans* on 2/2/19 1:15PM (>3 days after BCx)

Health and Economic Outcome Results

- Successful implementation of T2Candida and targeted antifungal treatment
 - **Multidisciplinary approach** (Micro, ID, ICU, Nursing, Stewardship)
 - **Faster initiation** of antifungals among patients with candidemia (All patients treated in <8 hours)
- **Earlier discontinuation** of empiric antifungals
 - 98% NPV used to stop antifungals
 - **Decreased antifungal utilization** across unit
- Evaluation of test performance and technical considerations (see figure to the right!)
 - Among MICU patients ordered T2Candida, 25% received empiric antifungals
 - Antifungals were discontinued with T2(-) results (median 2d)
 - Antifungals were avoided in all other patients



1. Shields, R, Presentation, MAD-ID, 2019.

2. Mylonakis, E., et. al. *Clinical Infectious Diseases*, 60(6), 892-899, 2015.