MIC Test Strip Technical Sheet **Direct MIC**

Direct MIC Testing of Critical Specimens

INTENDED USE

Direct specimen testing may provide faster information for therapy guidance and/or correction of empiric therapy in urgent clinical situations. However, results with direct specimen testing must always be considered preliminary and the clinician cautioned until confirmed by standardised pure isolate testing.

DIRECT SPECIMEN TESTING WITH MIC TEST STRIP

- Positive blood culture specimen testing with Gram positive and negative aerobes, anaerobes and yeast, have been investigated and published.
- Sputum testing for patients with cystic fibrosis and lower respiratory tract secretion samples from ventilator associated pneumonia (VAP) have also been studied.
- Variations in inoculum, type of organisms and potential contamination will not affect results significantly, as these phenomena can be visually inspected on the agar plate.

TEST PROCEDURE

1. Specimens: CSF, urines, sputum, respiratory tract samples and positive blood cultures from critical infections and critical patients.
2. Perform Gram stain or India ink / Lacto-phenol cotton blue stain (yeast) and examine microscopically.
3. Use a rich media and different incubation conditions to cover different suspected organisms:

Gram positive aerobes:	Mueller Hinton Agar + 5% blood/ 35°C/ ambient and 5% CO_2/ 20-48h
Gram negative aerobes:	Mueller Hinton Agar + 5% blood/ 35°C/ ambient/ 20-48h
Anaerobes:	Plate 1 – Brucella agar + 5% blood + vitamin K (1 µg/mL) + hemin (5 µg/mL) (BBA) 35°C/ anaerobic system/ 24-48h Plate 2 – Mueller Hinton agar +5% blood/ 35°C/ ambient/ 20-48h
Yeast:	RPMI / 35°C/ moist in plastic bag/ 24-48h

4. When testing sputum, sputulise the sample.
5. Pipette 0.3 mL of the undiluted positive blood culture, CSF or urine onto the agar plate and streak out evenly. If cells are sparse (microscopy), centrifuge to concentrate, re-suspend and streak. For sputum, moisten the swab with the sputolysed specimen and streak evenly onto the agar plate.
6. Test key Gram positive or Gram negative drugs as guided by Gram stain, icroscopy and suspected/ expected pathogens. For yeast, test fluconazole, itraconazole, voriconazole and amphotericin.
7. Start examining agar plates for preliminary results if growth is clearly visible for rapidly growing aerobes after 6-8h, 12-16h, then confirm again at 24h or longer. For sputum, incubate 48-72h.
   - Resistant results are considered more useful.
   - Susceptible results should be treated with caution until confirmed by standardised testing.
8. For sputum, identify the different colony morphotypes, species, growth patterns and respective MTS endpoints. Document the interaction between pathogens and normal flora, take a photograph of the agar plate to document significant findings and discuss with the treating clinician.
9. Always inform and caution the clinician that:
   - A modified procedure was used to generate preliminary results only.
   - Final results from standardised testing are pending.
10. ALWAYS CONFIRM DIRECT TESTING RESULTS WITH THE STANDARDISED OVERNIGHT MTS PROCEDURE.
11. Initiate this procedure simultaneously with direct testing and report results as soon as available.
12. Collect data to validate rapid specimen versus pure isolate testing.
13. Run QC organisms on all test occasions.

ANTIBIOGRAM – EXAMPLES ONLY (PLEASE USE YOUR OWN FORMULARY)			
Gram positive aerobic diplococci	Penicillin G (P) 0.002 - 32 µg/mL Cefotaxime (CTX) 0.002 - 32 µg/mL	Meropenem (MRP) Vancomycin (VA)	Trimethoprim / Sulfamethoxazole (SXT) Erythromycin (E)
Gram positive aerobic cocci	Gatifloxacin (GAT) Cefoxitin (FOX)	Gentamicin (CN) Linezolid (LNZ)	Penicillin G (P) 0.016 - 256 µg/mL Vancomycin (VA)
Gram negative aerobic bacilli	Amikacin (AK) Ciprofloxacin (CIP)	Aztreonam (ATM) Imipenem (IMI)	Cefepime (FEP) Piperacillin / Tazobactam (TZP)
Anaerobes cocci/ bacilli	Penicillin G (P) 0.016 - 256 µg/mL Imipenem (IMI)	Cefoxitin (FOX) Metronidazole (LZ)	Clindamycin (CD) Piperacillin / Tazobactam (TZP)
Yeast	Fluconazole (FLU) Amphotericin B (AMB)	Itraconazole (ITC)	Voriconazole (VO)

REFERENCES

- CLSI M100-S22, 2012. Performance Standards for Antimicrobial Susceptibility Testing.
- CLSI M7-A9, 2012. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically.
- CLSI M11-A7, 2007. Methods for Dilution Antimicrobial Susceptibility Testing of Anaerobic Bacteria.
- CLSI M11-S1 Performance Standards for Antimicrobial Susceptibility Testing of Anaerobic Bacteria.
- CLSI M27-A3. Reference Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts; Approved Standard - Third Edition.
- CLSI M27-S3. Reference Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts; Third Informational supplement.
- EUCAST. Breakpoint tables for interpretation of MICs and zone diameters Version 2.0, January 2012.
- Rossolini, G.M. et al. (2011). Evaluation of a new gradient-diffusion system for MIC determination with Gram-negative pathogens. ECCMID, poster 572.
- Stefani, S. et al (2011). A new reliable screening method for the evaluation of VISA and hVISA strains by "Vancomycin-Teicoplanin MIC Test Strip" (VTMTS). ECCMID poster 776.

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