



AF-300/600 鉴定药敏系统解决方案

AF-300/600 Automated microorganism analysis system Introduction

30th, Aug 2022

Dylan

ROW/EU Sales & Marketing Department

mindray迈瑞

生命科技如此亲近

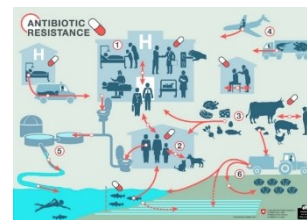
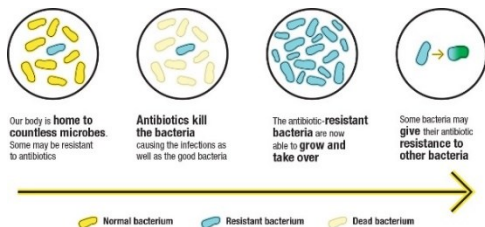
大背景：抗菌药物耐药的发生，传播与危害

Background: AMR(Antimicrobial Resistance): Selection, Transmission and Risk

- WHO has declared that AMR is one of the top 10 global public health threats facing humanity.
- AMR bacteria infection will be NO.1 causes of deaths among all diseases in 2050.



- The occurrence of AMR is process of natural selection during antimicrobial treatment.
- AMR spread will occur between hospital and communities in any region and any countries



微生物常见高频词汇 1: MIC, KB and E-test

Highly frequent words in microbiology

Method to determine Antimicrobial susceptibility testing

抗菌药物敏感性测试方法

- **最小抑菌浓度 MIC**
Minimum inhibited concentration

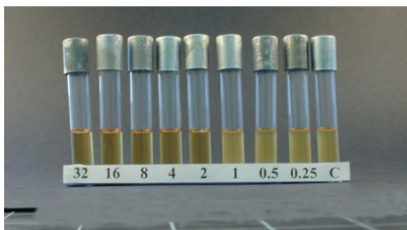


Figure 4.15 Determination of the minimum inhibitory concentration (MIC) by the tube broth dilution test. The MIC is 2.0 mg/L. C: control tube, no antibiotics.

- **E-test**
An exponential gradient of an antibiotic

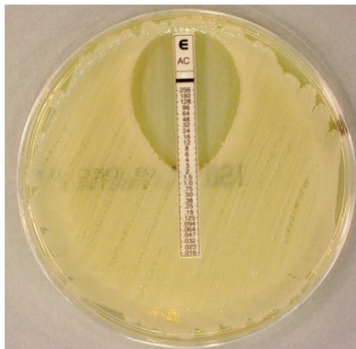


Figure 5.30 An amoxicillin Etest™ strip tested determines an MIC of 2 mg/L for this 'coliform'.

- **K-B: Disc-susceptibility testing**
A standard amount of antibiotic are placed on agar plates inoculated with the organism to be tested.

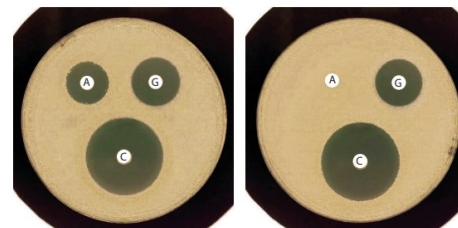


Figure 5.32 The photomicrograph shows the appearance of zones for isolates A and B.

微生物常见高频词汇 2: 折点与CLSI

Highly frequent words in microbiology: Breakpoint and CLSI

- 折点 BP: 判断抗生素是否适用于治疗某种细菌感染重要依据

Breakpoints : The concentration of antibiotic used to define whether an infection by a particular bacterial strain/isolate is likely to be treatable in a patient.

Test/Report Group	Antimicrobial Agent	Disk Content	Interpretive Categories and Zone Diameter Breakpoints, nearest whole mm				Interpretive Categories and MIC Breakpoints, µg/mL			
			S	SDD	I	R	S	SDD	I	R
PENICILLINS										
A	Ampicillin	10 µg	≥17	-	14-16 [^]	≤13	≤8	-	16 [^]	≥32

- CLSI: 检测方法学, MIC和BP汇总的标准性文档

CLSI: A international standard of collection of method, MIC and BP



微生物常见高频词汇 3: 抗菌药物监测报告

Highly frequent words in microbiology: Antimicrobial surveillance report

- **年度发布, 国家或区域维度**
Annual print, National or regional
- **记录重要临床分离株对常见抗生素的耐药变迁**
Record in changes of antimicrobial resistant to medically important clinical isolates



ANNUAL REPORT
SUMMARY | 2020

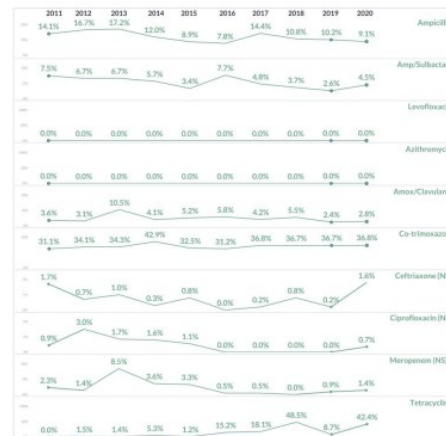


Figure 16. Yearly resistance rates of H. influenzae DOH-ARSP, 2011-2020

Roadmap

路线图

1. AF-300全自动鉴定药敏系统产品方案介绍

AF-300 Automated microorganisms analysis system introduction

- 消费者群体分析 Customer analysis
- 微生物实验的操作流程 Workflow in clinical microbiology lab
- 产品介绍 Product introduction

2. AF-300营销方案介绍

AF-300 marketing strategy introduction

3. 总结

Conclusion

客户在哪里：重点关注 医院

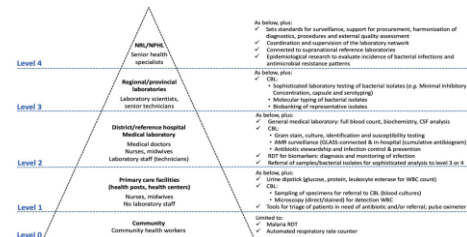
Where is customer: Hospitals go first

1. “Hospitals” go first in both Emerging and EU Market

Emerging Market: **Level 3 and above (Provincial and above)**

EU: **Level 2 and above**

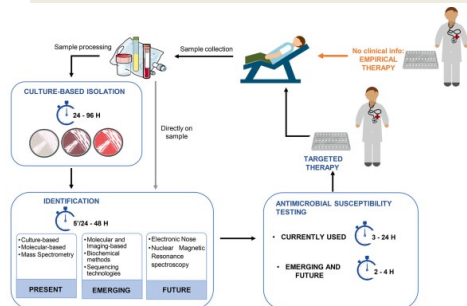
2. Attention to Core lab of conciliated laboratories



谁来使用 – 临床微生物实验室

End-user – clinical microbiology lab (Pathologist, Microbiologist and Technician)

Responsibilities : Offers comprehensive testing for detection, isolation, characterization and susceptibility testing of infectious agents.

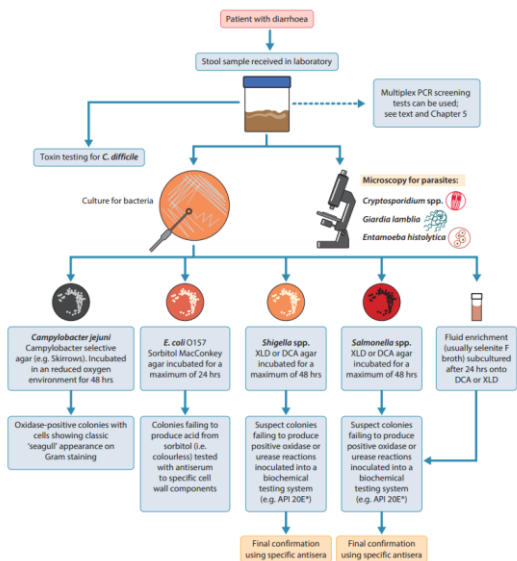


微生物实验室工作流程及抱怨

Workflow and complaints in clinical microbiology Lab

目的：**以患者为中心，服务临床，提升感染性疾病的诊疗效率**

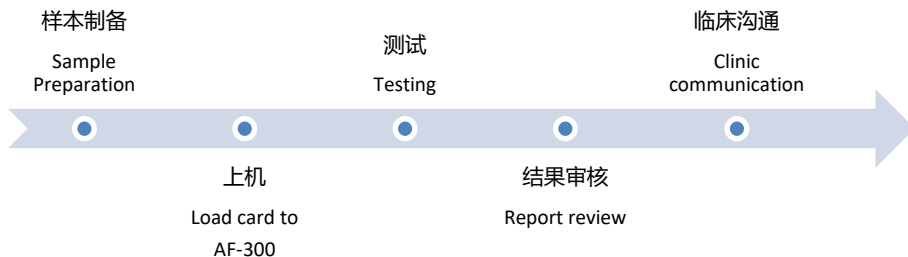
Target: Taking patients as the center, serving the clinic, and improving the efficiency of diagnosis and treatment of infectious diseases



主要问题:

Main complaint

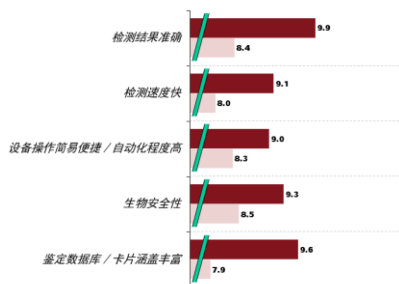
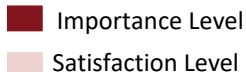
- **依赖人工**的步骤较多 (接种, 涂片以及报告审核...)
Multiply steps rely on empiric work (Smear, Inoculation and report review..)
- **流程工作时间较长** (TAT > 24h)
Long time of the whole workflow (TAT > 24H)



什么样的产品是客户的期待?

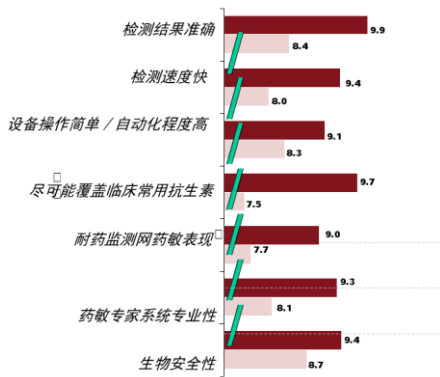
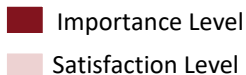
Expectations to ID/AST products from clinical microbiology Laboratory

鉴定/ID (N=234)



- 结果**准确** (核心问题)
Accuracy result (A core concern)
- 菌种库要**全** (减少其他方法学运用)
Overall ID taxa (Reduce additional alternatives)
- **安全性**保证 (病原体风险种未知)
Ensure safety (Unknown risk from pathogen)
- 检测速度**快** (提升诊疗效率)
Timely result (Improve efficiency)

药敏/AST (N=234)



- 结果**准确** (核心问题)
Accuracy result (A core concern)
- 能覆盖**全**临床常用抗生素 (服务临床是第一要义)
Overall antibiotics options (Serve the clinic is top priority)
- 速度**快** (争取1个工作日可发报告)
Timely result (Improve efficiency)
- **智能**和**安全性**保证
Ensure smart and safety workflow

AF-300 全自动微生物检测系统：精准，智能，全面

AF-300/600 automated microbiology analysis system: Accuracy, Comprehensive and Smart

- 迈瑞致力于提供**精准、智能、全面**的全自动鉴定药敏整体解决方案
Mindray submitted to AMR control by providing an accuracy, comprehensive and smart automated ID/AST solution

全自动微生物鉴定药敏分析仪
Automated Microorganisms analysis system



- ◆ AF-300
- ◆ AF-600

全自动加样仪
Automated dosing system



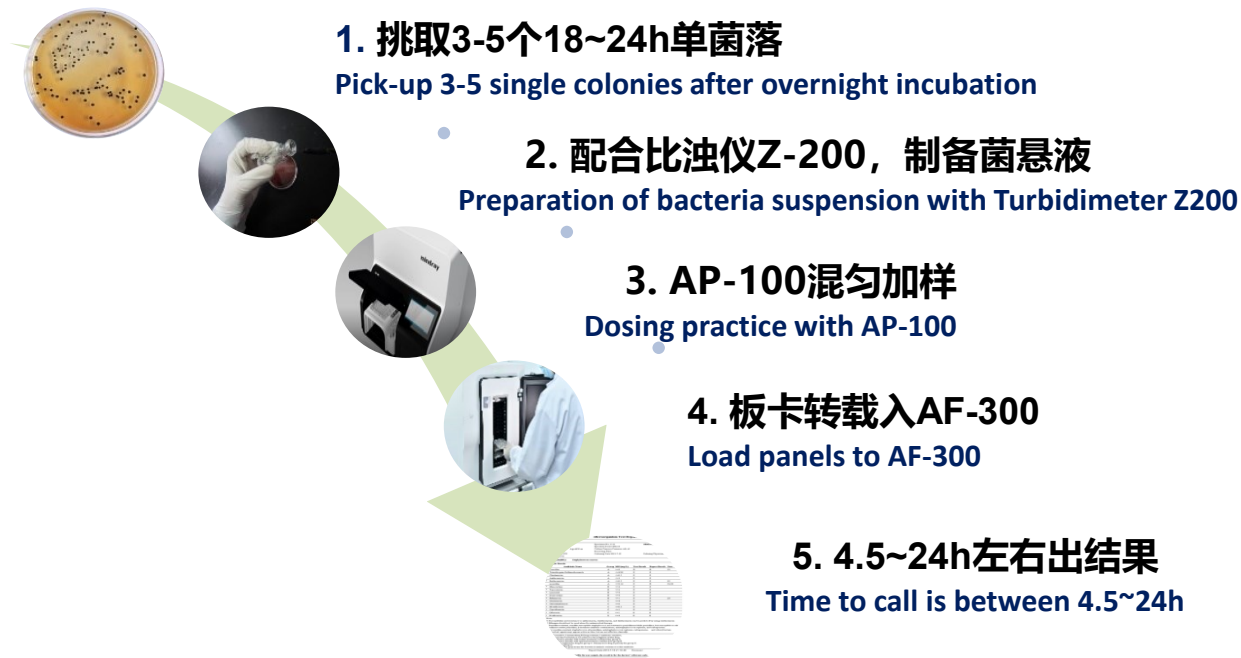
- ◆ AP-100

10种ID/AST试剂盒
10 types ID/AST panels



AF-300系列产品操作流程

Workflow of Mindray automated ID/AST system



AF-300/600提供精准的鉴定药敏解决方案

AF-300/600 provides **ACCURATE** identification and AST solution

- **AF产品的新技术介绍:**
New technology introduction to AF-300
- **系统整体性能介绍**
AST performance display



AF-300



AP-100

AF-300 新技术介绍之高分辨检测系统：更精准

New Technology introduction to AF-300 – HD detection system, More accuracy

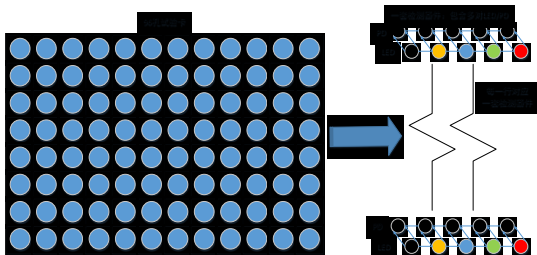
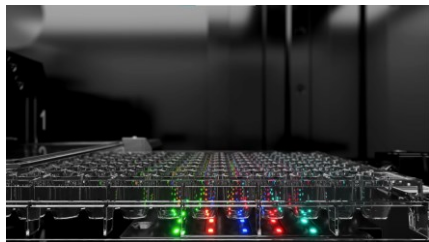
基础：

Basic:

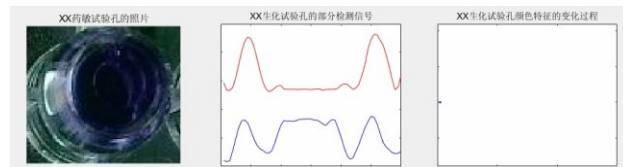
多波长传感器阵列- 捕获特征性微生物代谢反应

Multiwavelength array sensor scans dynamically throughout the entire process to capture characteristic microbial metabolic responses
5 wavelength (420nm, 490nm, 545nm, 590nm, 780nm)

多波长传感器阵列
Multiwavelength Array Sensor



生化试验反应
Reaction in ID Cells



AF-300 新技术介绍之高分辨检测系统：更精准

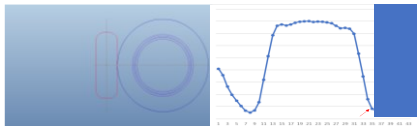
New Technology introduction to AF-300 – HD detection system, More accuracy

关键点：

key steps

1) 全程扫描：每个实验孔扫描超过30个位点

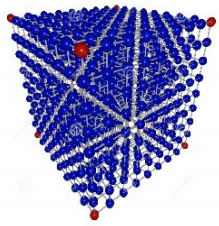
Whole scan: Each experimental well scans more than 30 loci



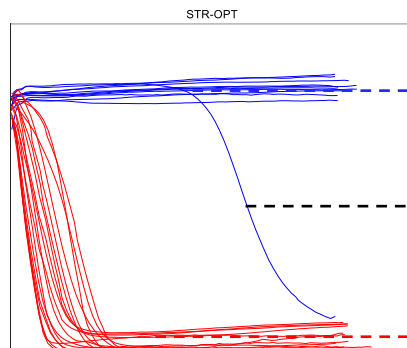
高精度扫描实验孔
High-precision scan of experimental wells

2) 模式识别：提升微生物鉴定准确率

Pattern recognition algorithm: Improves the accuracy of microbial identification



多维矩阵
Multi-dimensional Matrix



S. pneumoniae
NEG: Purple



Contamination of
STR testing
End-point POS:
Yellow



Other *Streptococcus*
POS: Yellow

AF-300 新技术介绍之基于AI药敏算法: 更快速

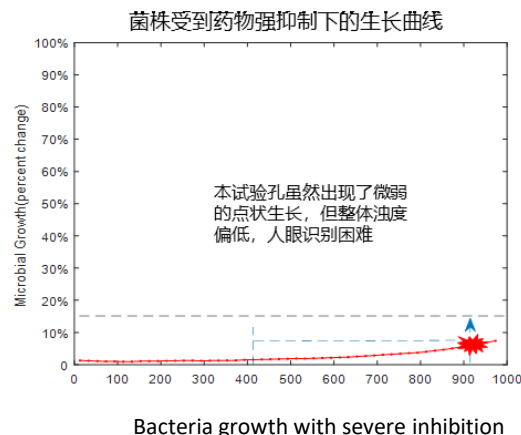
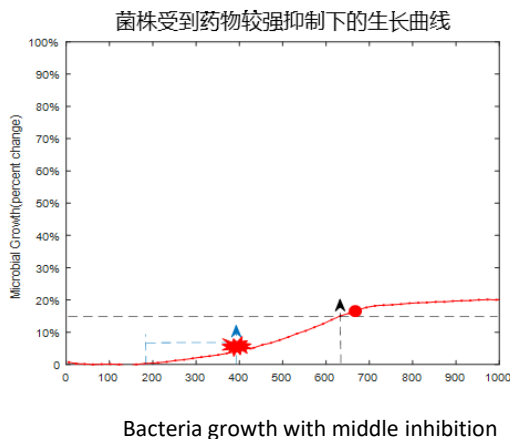
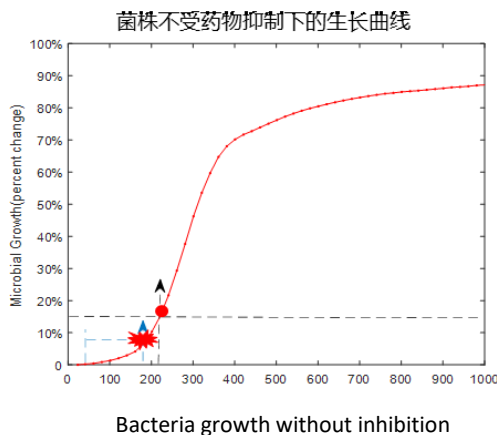
New Technology introduction to AF-300 – AI AST algorithm, More Rapid

- **AF-300药敏新算法:**

AF-300 AST new algorithm

- 1) **人工智能: 大数据+生长趋势预测**

AI : Big Data + Growth prediction



AF-300 新技术介绍之基于AI药敏算法: **更快速**

New Technology introduction to AF-300 – AI AST algorithm, More Rapid

- **AF-300药敏新算法:**

AF-300 AST new algorithm

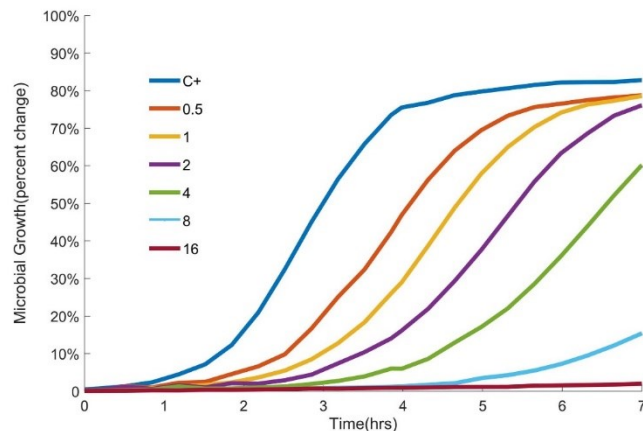
- 2) **动态更新: 每20min更新一次生长信息**

Dynamic update : Information of growth records every 20 mins

- 3) **快速报告: 最快260min报告药敏结果**

Rapid report: Min time to calling MIC is 260min

粪肠球菌 *E. faecalis*
四环素 *Tetracycline*
MIC=16 μ g/mL



FDA关于药敏分析系统性能要求

FDA standard for commercial antimicrobial susceptibility Test (AST) systems

- 与标准方法相比，AF-300/600整体系统药敏性能满足FDA对商品化药敏检测系统的参数要求
The comprehensive AST performance of AF-300/600 meets FDA requirements for commercial antimicrobial susceptibility analysis system compared with microbroth dilution.

Table. 1 AF-300/600 AST performance (with BMD)

Guidance for Industry and FDA Class II Special Controls Guidance Document: Antimicrobial Susceptibility Test (AST) Systems

Document issued on: August 28, 2009

This document updates the one of the same title, issued March 5, 2007

- Percent essential and category agreement > 89.9%. A CA of < 90% may be acceptable under certain circumstances (e.g., very good EA of the evaluable test results with the majority of the discrepancies as minor discrepancies).
- A maj rate of $\leq 3\%$ based on the number of susceptible organisms tested.
- A vmj rate based on the number of resistant organisms tested. Table 8 lists the numbers of very major discrepancies as a function of the total number of resistant organisms tested with proposed statistical criteria for acceptance that include an upper 95% confidence limit for the true vmj rate of $\leq 7.5\%$ and the lower 95% confidence limit for the true vmj $\leq 1.5\%$.
- Growth failure rates in the system < 10% for any genus or species tested.

	TDR One-96	TDR NF-96	TDR Staphy-96	TDR STR-96	TDR NH-96	TDR Yeast-96	FDA standards	Result
CA%	95.7%	92.4%	98.4%	95.2%	94.4%	95.2%	> 89.9%	Pass
EA%	98.4%	97.3%	98.0%	98.9%	94.0%	90.1%	> 89.9%	Pass
VME%	1.3%	0.9%	0.72%	0%	2.2%	0%	< 2.7%	Pass
ME%	0.5%	0.43%	0.24%	0.4%	2.8%	2.4%	< 3%	Pass
GF%	0%	0.90%	0%	0.89%	0.82%	0%	<10%	Pass

AF-300/600提供精准鉴定药敏解决方案：

Mindray AF-300/600 provide accurate ID/AST solution for Clinical microbiology lab

- **AF-300/600的整体药敏系统性能满足FDA对商品化系统的要求**

The comprehensive AST performance of AF-300/600 meets FDA requirements for commercial antimicrobial susceptibility analysis system compared with microbroth dilution

- **新技术：**

New Technology

鉴定：多波长阵列传感器 + 模式识别算法 = 高精度检测系统

ID: Multiwavelength array sensor + Pattern recognition = A highly accurate detection system

药敏：AI生长预测 + 动态更新 = 最快 260min出结果

AST: AI Growth predict + dynamic reading = Minimum 260min calling MIC

AF-300/600 系统提供全面的鉴定药敏试剂方案

AF-300/600 provides **Comprehensive reagent** identification and AST solution

- **齐全的ID/AST试剂**
All-inclusive ID/AST reagent
- **完整的抗菌药物检测谱**
A whole panoply of antibiotic
- **宽阔的MIC检测浓度**
A wide range of MIC



卡全：提供业内最完整的鉴定药敏解决方案

Mindray provide a full ID/AST reagent solution to laboratory

- 10种细菌药敏鉴定复合卡**
 10 ID/AST combo panels provided
- 鉴定菌库覆盖超过500余种细菌，覆盖临床常见的98%的重要细菌**
 ID taxa provide identification to over 500 bacteria, including 98% medically important bacteria and fungi
- Vitek缺流感/奈瑟药敏方案，BD/BCI缺流感/奈瑟和真菌药敏方案**
 Vitek unable to provide AST solution to Haemophilus/Neisseria, BD and BCI unable to provide AST solution to Haemophilus/Neisseria and Fungi

P/N	板卡类型/Panel	名称/ Description	可鉴定细菌数量 /ID Number
	TDR One-96	肠杆菌科细菌鉴定药敏试剂盒 (Enterobacterium ID/AST kit)	145
105-009408-00	TDR NF-96	非发酵菌鉴定药敏试剂盒 (Non-fermentation bacteria ID/AST kit)	55
105-009418-00	TDR NH-96	奈瑟/嗜血鉴定药敏试剂盒 (Haemophilus and Neisseria ID/AST kit)	27
105-003743-00	TDR STAPH-96	葡萄球菌鉴定药敏试剂盒 (Staphylococcus ID/AST kit)	47
105-009413-00	TDR STR-96	链球菌鉴定药敏试剂盒 (Streptococcus ID/AST kit)	45
105-009403-00	TDR Yeast-96	真菌鉴定药敏试剂盒 (Yeast-like Fungi ID/AST kit)	43
105-011763-00	TDR CB-96*	棒状杆菌鉴定药敏试剂盒 (Corynebacterium ID/AST kit)	39
105-011769-00	TDR VIB-96*	弧菌鉴定药敏试剂盒 (Vibrio ID/AST kit)	14
105-003721-00	TDR ANA-96*	厌氧菌鉴定药敏试剂盒 (Anaerobe ID/AST kit)	67
105-011766-00	TDR BAC-96*	芽孢杆菌鉴定药敏试剂盒 (Bacillus ID/AST kit)	20

* 限制性销售产品 (Not available in all nations)

耐药表型的检测能力：15种

Numbers of resistant phenotype detection : 15 different types

Serial	Abbreviation	Full Name	Panels
1	CRE	Carbapenem-Resistant Enterobacterales	TDR One-96
2	CRPAE	Carbapenem-Resistant Pseudomonas aeruginosa	TDR NF-96
3	CRAB	Carbapenem-Resistant Acinetobacter baumannii	TDR NF-96
4	MRSA	Methicillin-resistant Staphylococcus aureus	TDR STAPH-96
5	BORSA	Broadline Methicillin-resistant Staphylococcus aureus	TDR STAPH-96
6	MRCoNS	Methicillin-resistant Coagulase-Negative Staphylococcus	TDR STAPH-96
7	VISA	Vancomycin-Intermediate Staphylococcus aureus	TDR STAPH-96
8	hVISA	Heterogeneous VISA	TDR STAPH-96
9	VRSA	Vancomycin-Resistant Staphylococcus aureus	TDR STAPH-96
10	VRE	Vancomycin-Resistant Enterococcus	TDR STR-96
11	PRSP	Penicillin-resistant Streptococcus pneumonia	TDR STR-96
12	PISP	Penicillin-intermediate Streptococcus pneumonia	TDR STR-96
13	BLANR	β -lactamase-negative, ampicillin-resistant(BLNAR) Hemophilus influenzae	TDR NH-96
14	MLSB	Macrolide-Lincosamide Streptogramin B (MLSB)	TDR STAPH、STR-96
15	HLGR	High-level Gentamicin resistance	TDR STR-96

特色板卡介绍- 真菌卡 TDR Yeast-96

Unique ID/AST panel: *Yeast-like* ID/AST kit introduction

Yeast-96实测8种抗菌药物

Yeast -96 include 8 antifungal drugs

- ✓ 所有药物覆盖CLSI / Eucast折点 (2022)
All tested concentration include S/I/R breakpoints from CLSI and Eucast (2022)
- ✓ 每种药物测试浓度 ≥ 5 , 满足流行病学监测研究和临床折点判读
Serials double-dilution for each testing antifungals enable clinic and epidemiology research
- ✓ **适用于酵母样真菌 (血平板, 沙氏平板)**
Apply for Yeast-like fungi from Colombia and SDA agar)

Antifungals	Calling MIC Range			
	TDR Yeast-96	TDR Yeast-YST	Vitek YS 07	Vitek YS 08
Flucytosine	0.5-64	0.12-128	1-64	1-64
Amphotericin B	0.25-4	0.008-4	0.25-16	0.25-16
Ketoconazole	0.5-32			
Itraconazole	0.06-2	0.008-4		
Fluconazole	0.002-64	0.12-128	1-64	0.5-64
Caspofungin	0.002-8	0.008-8	0.25-4	0.125-8
Micafungin	0.002-8	0.008-8	0.06-4	0.06-8
Voriconazole	0.06-2	0.008-8	0.12-8	0.12-8
Terbinafine		0.008-8		

特色板卡 – 奈瑟/嗜血药敏卡 TDR NH-96

Unique ID/AST panel: *Haemophilus* and *Neisseria* ID/AST kit introduction

NH-96实测18种抗菌药物

NH-96 Include 18 antibiotics

✓ 唯一提供苛养菌药敏的解决方案

Only *Haemophilus* and *Neisseria* ID/AST solution provider

✓ 所有药物覆盖CLSI / Eucast折点 (2022)

All tested concentration include S/I/R breakpoints from CLSI and Eucast (2022)

✓ 改良肉汤培养, 无需添加裂解马血/脱纤维羊血 Modified M-H Broth without defibrillated blood

✓ 适用于嗜血杆菌属, 奈瑟菌属, 卡他莫拉菌 (巧克力培养基)

Apply for *Haemophilus*, *Neisseria*, *Moraxella Catarrhalis* (*Chocolate agar*)

Antimicrobials	Calling MIC Range	
	TDR NH-96	TDR NH-YST
Penicillin		0.03-4
Ampicillin	0.12-2	0.06-4
Chloramphenicol	2-16	1-8
Ampicillin-sulbactam	1/0.5-4/2	1/0.5-4/2
Cefuroxime	2-8	2-16
Ceftazidime		1-2
Cefixime	0.5-2	0.5-2
Amoxicillin-clavulanic acid	2/1-8/4	2/1-8/4
Piperacillin - tazobactam		0.5/4-2/4
Meropenem	0.25-8	0.12-16
Ceftriaxone	0.12-2	0.12-2
Cefepime	0.25-2	0.25-2
Aztreonam	1-2	2-4
Lomefloxacin	1-2	1-2
Azithromycin	0.25-4	0.25-4
Erythromycin	1-2	
Clindamycin	0.5-2	
Tetracycline	1-4	1-4
Levofloxacin	0.03-4	0.03-4
Rifampin	0.5-2	0.12-4
Co-Trimoxazole	0.12/2.4-2/38	0.12/2.4-4/76

常规板卡介绍-非发酵菌卡 TDR NF-96

Common ID/AST panel: *Non-fermentation bacteria* ID/AST kit introduction

NF-96 实测21种抗菌药物
NF-96 Include 21 antibiotics

- ✓ **所有药物浓度覆盖CLSI折点(2022);除妥布霉素(铜绿), 全面覆盖Eucast折点**
All tested concentration include S/I/R breakpoints from CLSI(2022) and and Eucast (2022, expect Tobramycin for PAE)
- ✓ 包含米诺环素, 头孢哌酮-舒巴坦, 替加环素和多粘菌素B
Antibiotic lists include *Minocycline*, *Tigecycline*, *Colistin* and *Cefoperazone-Sulbactam*
- ✓ **结合氧化酶实验结果进行选择来血平板和麦康凯的分离株**
Selection of cards according to result of Oxidase by strains from either Colombia and MacConkey media
1) Negative 2) Positive - *Acinetobacter* and *Stenotrophomonas maltophilia*
- ✓ 微量肉汤稀释法对黏菌素耐药的菌株有优异检测性能
BMD method enable an excellent performance to detect colistin-resistant strains

Antimicrobials	Calling MIC Range
Piperacillin	16-32-64
Ceftazidime	4-8-16
Cefepime	8-16-32
Ticarcillin- clavulanate	16/2-32/2-64/2
Piperacillin- tazobactam	16/4-32/4-64/4
Cefperazone- Sulbactam	16/8-32/16-64/32
Ampicillin- sulbactam	8/4-16/8
Ceftriaxone	0.12-1-2-4-8-16-32
Meropenem	1-2-4-8-16
Aztreonam	2-4-8-16
Gentamicin	4-8
Amikacin	4-8-16-32
Trimethoprim- sulfamethoxazole	0.5/9.5-1/19-2/38
Tigecycline	1-2-4-8
Chloramphenicol	8-16
Tobramycin	4-8-16
Ciprofloxacin	0.5-1-2
Levofloxacin	0.06-1-2-4
Minocycline	4-8
Colistin	2-4-8
Tetracycline	1-2-4-8-16

常规板卡介绍-肠杆菌 TDR one-96

Common ID/AST panel: *Enterobacteriaceae* ID/AST kit introduction

ONE-96实测20种抗菌药物

One-96 Include 20 antibiotics

- ✓ **所有药物浓度覆盖CLSI折点 (2022); 除替加环素(Eco)覆盖欧盟折点**
All tested concentration include S/I/R breakpoints from CLSI (2022) and Eucast (Except for Tigecycline for Eco)
- ✓ **包含米诺环素, 头孢哌酮-舒巴坦, 替加环素和多粘菌素B**
Antibiotic lists include *Minocycline*, *Tigecycline*, *Colistin* and *Cefoperazone-Sulbactam*
- ✓ **结合氧化酶实验结果进行选择来血平板和麦康凯的分离株**
Selection of cards according to result of Oxidase by strains from either Colombia and MacConkey media (Positive - *Enterobacteriaceae*, *Acinetobacter* and *Stenotrophomonas maltophilia*)
- ✓ **微量肉汤稀释法对黏菌素非敏感的菌株有优异检测性能**
BMD method enable an excellent performance to detect colistin NS strains (mcr-1)

Antimicrobials	Calling MIC Range
Ampicillin	8-16
Cefuroxime	8-16
Cefoxitin	8-16
Cefoperazone- Sulbactam	16/8-32/16
Piperacillin- tazobactam	8/4-16/4-64/4
Cefepime	1-2-4-8-16
Cefazolin	2-4-8-16
Ceftazidime	1-4-8-16
Aztreonam	1-2-4-8
Meropenem	1-2-4-8
Ceftriaxone	1-2-4-8-32
Tigecycline	1-2-4
Colistin	1-2-4-8
Minocycline	4-8
Trimethoprim- sulfamethoxazole	2/38-4/76
Gentamicin	2-4-8
Amikacin	8-16-32
Nitrofurantoin	32-64
Levofloxacin	0.12-0.5-1-2-4
Ampicillin- sulbactam	8/4-16/8
Ampicillin	8-16
Cefuroxime	8-16

常规板卡介绍：链球菌 TDR STR-96

Common ID/AST panel: *Streptococcus* ID/AST kit introduction

STR-96实测16种抗菌药物

STR-96 Include 16 antibiotics

- ✓ **所有药物浓度覆盖CLSI折点 (2022); 除利福平(STR)覆盖欧盟折点**
All tested concentration include S/I/R breakpoints from CLSI 2022 and Eucast (Except for Rifampicin to Streptococcus)
- ✓ 改良肉汤培养，无需添加裂解马血/脱纤维羊血
Modified M-H Broth without defibrillated blood
- ✓ 适用于链球菌/肠球菌（触酶阴性，血平板和巧克力平板）
Apply for Catalase (NEG) *Streptococcus* and *Enterococcus* from blood agar and chocolate agar
- ✓ 提供β-内酰胺酶，高水平庆大霉素耐药和克林霉素诱导耐药检测实验
β-lactamase, HLGR and MLSB is included

Antimicrobials	Calling MIC Range
Penicillin	0.06-0.12-0.25-0
	5-1-2-4-8
Ampicillin	0.25-4-8-16
Meropenem	0.25-0.5-1-2
Ceftriaxone	0.5-1-2
Moxifloxacin	0.5-1-2
Levofloxacin	2-4
Erythromycin	0.25-0.5-1-2-4
Clindamycin	0.25-0.5-1
Daptomycin	1-2-4
Linezolid	2-4-8
Nitrofurantoin	32-64
Teicoplanin	2-4-8-16
Tetracycline	1-2-4-8
Vancomycin	0.5-1-2-4-8-16-32
Trimethoprim- sulfamethoxazole	0.5/9.5-1/19-2/38
Rifampicin	0.5-1-2

常规板卡介绍：葡萄球菌卡 TDR STAPH-96

Common ID/AST Common ID/AST panel: *Staphylococcus* ID/AST kit introduction

STAPH-96实测19种抗菌药物

STAPH-96 Include 19 antibiotics

- ✓ 所有药物覆盖CLSI / Eucast折点 (2022)
All tested concentration include S/I/R breakpoints from CLSI and Eucast (2022)
- ✓ 适用于葡萄球菌(触酶实验阳性, 血平板)
Apply for Catalase (POS) GP from blood agar
- ✓ 包含万古霉素, 替考拉宁, 达托霉素和利奈唑胺
Antibiotic lists include Vancomycin, Teicoplanin, Linezolid and Daptomycin
- ✓ 提供MRSA, VRSA和庆大霉素耐药和克林霉素诱导耐药检测实验
MRSA, VRSA and MLSB testing are included

Antimicrobials	Calling MIC Range
Oxacillin	0.12-0.25-0.5-1-2-4
Cefoxitin	4-8
Penicillin	0.12-0.25-0.5
Levofloxacin	1-2-4
Trimethoprim-sulfamethoxazole	2/38-4/76
Vancomycin	1-2-4-8-16-32
Linezolid	4-8
Moxifloxacin	0.25-0.5-1
Gatifloxacin	0.5-1-2
Deoxytetracycline	4-8
Rifampin	0.5-1-2
Azithromycin	1-2-4
Nitrofurantoin	32-64
Tetracycline	1-2-4-8
Gentamicin	1-2-4-8
Erythromycin	0.5-1-2-4
Clindamycin	0.25-0.5-1-2
Teicoplanin	2-4-8-16
Daptomycin	0.5-1

迈瑞鉴定药敏试剂组成介绍

Composition of Mindray ID/AST reagent kit

- **每个试剂盒包含**

A box of kits include:

- 1) 10片 鉴定药敏复合板卡
- 1) 10 separated ID/AST kits
- 2) 10只 生化培养液(红盖)
- 2) 10 ID broth (Red cap)
- 3) 10只 药敏培养液(黄盖)
- 3) 10 AST broth (Yellow cap)
- 4) 其他 4) Others

- **无需其他耗材**

NO additional reagents required

- **保质期: 12个月**

Expiration Date : 12 months

- **储运温度: 避光, 2 ~ 8°C**

Transportation and storage : Avoid direct sunlight, 2~8°C



药多：覆盖指南中多种治疗MDR的药物

A overall antibiotics list to MDRs infection threat

- **迈瑞常规检测板卡全面覆盖EU/ROW区多份临床指南中多重耐药的细菌一线治疗药物**
Most 1st –line antimicrobial in EU/Emerging MKT clinical guideline for Multi-drugs resistance bacteria (MDR) listed in Mindray routine ID/AST solutions
- **实验室可无需再补充手工药敏**
No additional K-B or E-test method required

MDR 菌株	一线治疗药物 First-in line Antimicrobials	One-96	NF-96	STAPH-96	STR-96/AST
ESBLs	Meropenem, Piperacillin-Tazobactam, Cefoperazone-Sulbactam	✓			
CRE	Tigecycline, Polymyxin E Meropenem	✓			
CRAB	Tigecycline, Polymyxin, Doxycycline Cefoperazone - sulbactam	✓	✓		
CRPAE	Polymyxin, Cefepime Piperacillin-tazobactam		✓		
MRSA	Vancomycin, Linezolid, Daptomycin			✓	
VRE	linezolid, Daptomycin				✓

药多：全面覆盖区域/国家耐药监测的报告药物

An overall antibiotic list to National and regional Antimicrobial surveillance report

1. Compared with Manufacture A, Antibiotic lists from Mindray will be able to cover most of antibiotics submitted to surveillance, whereas list from Manufacture A will supply ~70%.
2. **Benefit**
 - 1) No additional K-B and E-test method required
 - 2) Improve quality of data submitted and help control AMR rates

Antibiotics surveillance submitted

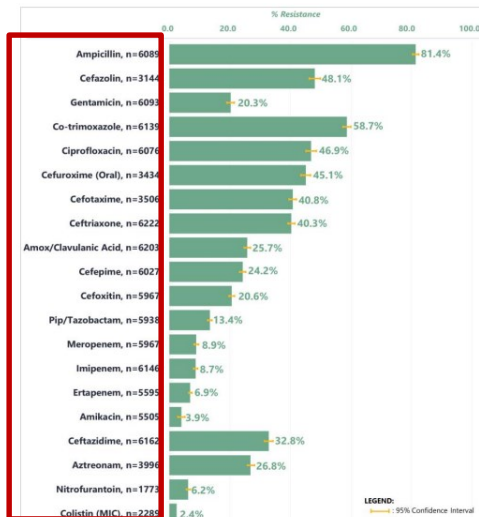


Figure 72. Percent resistance of E. coli. DOH-ARSP, 2020

制造商 Manufacture	肠杆菌 Enterobacteria	流感/嗜血 Haemophilus/Neisseria	非发酵 Non-Fermentation	葡萄球菌 Staphylococcus
A	7/19	9/9	5/17	1/14
Mindray	2/19	0/9	1/17	0/14

说明 X/X(未满足监测数目/需上报药物数目)

Notes: X/X (Numbers of Antibiotics missing/Numbers of Antibiotics surveillance submitted)

浓度广：覆盖CLSI、Eucast推荐的药敏折点浓度

A wide MIC: Most testing concentration included S/I/R breakpoint from either CLSI or Eucast

- Compared with other Manufactures, Most antibiotic testing concentration included S/I/R breakpoint from either CLSI or Eucast
- No additional K-B and E-test method required

以CLSI 2022为标准，比较各制造商板卡对折点的覆盖情况
Comparison of different manufacture in term of breakpoint included based on CLSI 2022 M1

Test/Report Group	Antimicrobial Agent	Interpretive Categories and MIC Breakpoints, $\mu\text{g/mL}$			
		S	SDD	I	R
QUINOLONES AND FLUOROQUINOLO I.) (Continued)					
B	Ciprofloxacin	≤ 0.06	-	0.12-0.5 ^	≥ 1
B	Levofloxacin	≤ 0.12	-	0.25-1^	≥ 2

厂家 Manufacture	肠杆菌 Enterobacter	非发酵菌 Non-Fermenting	肠球菌 Enterococcus	链球菌 Streptococcus
Biomerieux	2			1
BD	3		1	
BCI	6	2		4
Mindray	0	0	0	0

(注：数字表示未能覆盖折点个数)

(Note: Numbers indicated fail to breakpoint included)

AF-300/600提供全面的鉴定药敏试剂解决方案

Mindray AF-300/600 provide comprehensive reagent ID/AST solution for Clinical microbiology lab

➤ 卡全：10种药敏鉴定一体化方案, 真菌和奈瑟是特色

All-inclusive ID/AST panels : 10 different ID/AST solution provided, Haemophilus/Neisseria and yeast Panels are the unique.

- 业内最全 无额外辅助试剂 Broadest among all manufacture and NO additional reagent required

解决什么临床-检验的沟通抱怨?

How can we help overcome complaints from communication between Lab and clinic?

有药可用，有理可循

Remedies available, Treatment reasonable

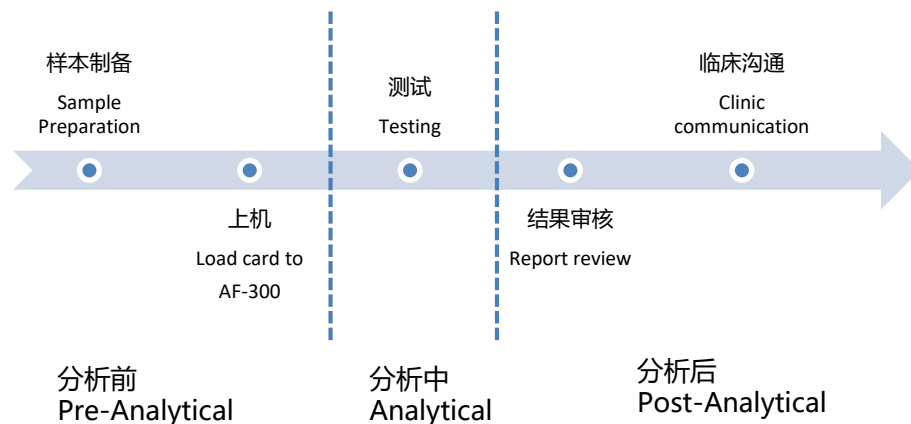
➤ 浓度广：所有检测药物覆盖CLSI/Eucast的临床折点

A board range of MIC testing: All antibiotic testing concentration included S/I/R breakpoint from either CLSI or Eucast

- 实验室：无需手工 Lab: No additional method required
- 临床：优化抗菌药物剂量 Clinic: Optimize dosage according to MIC

AF-300/600 系统提供智能化的检测流程 AF-300/600 Provide a **SMART workflow** for routines testing

- **分析前：精准加样**
Pre-Analytic: Precising dosing
- **分析中：卡片自动转运与调度**
Analytic: Automatic and timely dispatch
- **分析后：AI辅助报告审核**
Post-Analytic: Result review by AI assit

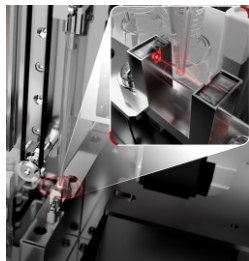
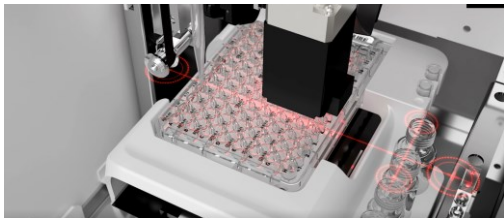


分析前：AP-100 精准定位，无需选卡，自动加样

Pre-Analysis: AP-100 High-accuracy positioning and precisely dosing without card selection

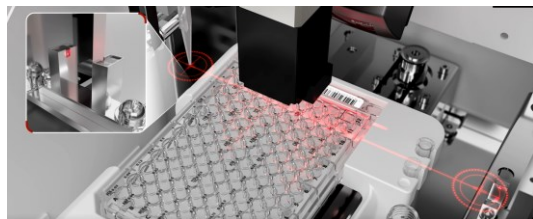
核心：Tip头多重定位技术 & 内置扫码枪

Core: Multi-location technology & build-in scanner



优势：无需人工校准，关门无需选卡，自动精准加样

Advantages: Manual calibration not required, precisely dosing achieved after close door without card selection



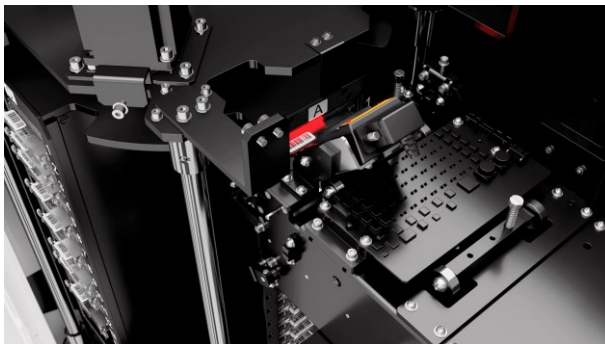
分析中：实验卡的实时自动调度

During analysis : Automatic and timely dispatch of testing panels

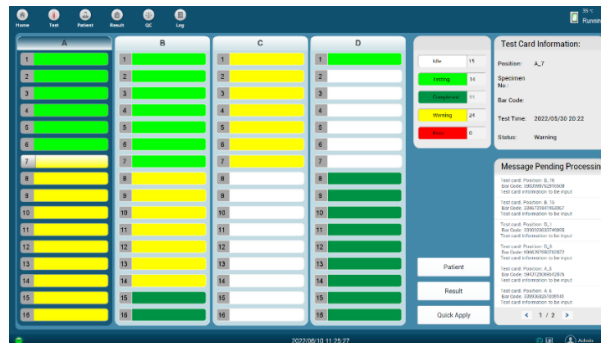
- 系统根据实验卡的测试状态，自动对实验卡进行归集，方便卡片批量装载和卸载，减少转运时间

The system automatically and timely dispatches testing panel according to the its status, enables batch loading and unloading of test cards and reduces the time of transferring.

内置扫码
build-in scanner



状态更新
Status update



分析后：结果自动审核 – 实验室对原始结果的疑问？

Post-Analytic: fast and accurate review of report – Why we need experts system?



仪器得到原始结果后，实验室工作人员会有下列疑问：

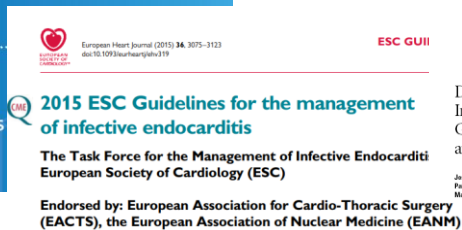
Laboratory staff may have questions below when an original results obtained from systems

- **鉴定、药敏结果可靠吗？**
Are the identification and antimicrobial susceptibility results reliable?
- **药敏结果有没有可能导致临床治疗失败的风险？**
Is there any risk of antimicrobial susceptibility results that may lead to clinical treatment failure?
- **有没有存在矛盾的结果？**
Are there conflicting results?
- **需要添加哪些注释帮助临床了解耐药表型的意义？**
What notes need to be added to help the clinic understand the significance of the antimicrobial resistance phenotype?

智能的专家系统介绍 – 集全球智慧，与用户一起成长

Intelligent expert system : A collection of global wisdom, grow together with customers

基础：
Brick:



中华检验医学杂志2016年1月第39卷第1期 Chin J Lab Med, January 2016, Vol. 39, No. 1

· 指南与共识 ·

常见细菌药物敏感性试验报告规范
中国专家共识

定位：
Position

目标：
Targets



- 一位乐于分享的权威专家
An outstanding expert to share
- 一项体验极佳的学习工具
An excellent tool to learn



- 提升临床实验室微生物报告的准确性
Increase accuracy of clinical microbiology reports



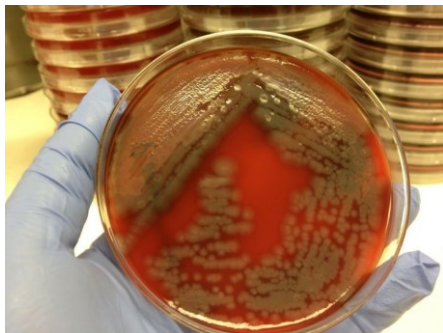
- 让临床获取更多的有价值信息
More value information add to clinic

分析后：鉴定百科助力核实鉴定结果

Post-Analytic : ID encyclopedia help verify Identification result

- 业内唯一的菌种百科提供常见菌株的形态和培养信息，致病性以及流行病学信息，帮助实验室辅助核实ID结果的准确性

The unique ID encyclopedia provides morphology and Culture, pathogenicity and epidemiological information of common strains to help laboratories verify the accuracy of ID results



Select the bacteria type ×

Select other bacteria + -

Organism Name	probability	Unusual Experiment	Supplement Experiment
Pseudomonas aeruginosa			

Bacteria encyclopedia

Pseudomonas aeruginosa: Pseudomonas aeruginosa is a common encapsulated, strict aerobic (although can grow anaerobically in the presence of nitrate), rod-shaped bacterium. All strains of P. aeruginosa are motile with a single flagellum. The growth of P. aeruginosa in solid agar media can occur between the temperature of 4°C and 44°C. The colonies are usually of three types; (1) large and smooth colonies with flat edges and elevated centers resulting in fried-egg appearance, (2) small, rough and convex type, (3) mucoid type of colony is also observed in isolates from respiratory and urinary tract infections. On routine blood agar, the typical P. aeruginosa colony is pigmented (gray/gray-white with a yellowish tint through green to red or brown). It is the most common cause of infections of burn injuries and of the outer ear (otitis externa), and is the most frequent colonizer of medical devices. An opportunistic nosocomial pathogen of immunocompromised individuals, it is the single most common pathogen of

OK Cancel

药敏专家系统介绍

AST expert system introduction

- 对于耐药表型，综合分析鉴定结果，MIC等结果，迈瑞AF-300的专家系统向客户传递：

For antimicrobial resistance phenotype, after comprehensive analysis and identification results, MIC and other results, the expert system of Mindray AF-300 delivers to customers:

1) 解释

Explanation of phenotype

2) 流行病学信息

Epidemiology information

3) 相关的治疗信息

Treatment related



<input checked="" type="checkbox"/> B01	Enterobacteriaceae resistant to carbapenems (ertapenem, doripenem) produce an enzyme that is resistant to antibiotic
<input type="checkbox"/> B18	The available observational data suggests the delivery of carbapenems by high-dose and prolonged-infusion (extended or continuous), in combination with/or without other antimicrobials, is reasonable for Enterobacteriaceae infections when the carbapenem MIC is <16 µg/mL. Consultation with an infectious disease specialist is recommended.
<input type="checkbox"/> B19	Ceftazidime-avibactam in combination with aztreonam, or cefiderocol as monotherapy are preferred treatment options for NDM and other metallo-β-lactamase-producing CRE infections.

Carbapenemases are categorized as either a metallo-β-lactamase (MBL) in Ambler class B or a serine β-lactamase. One of the functional groups of classes A or D. Class B β-lactamases, or metallo-β-lactamases (MBLs) is able to hydrolysis all β-lactam expect Aztreonam. Knowledge of whether a CRE clinical isolate is carbapenemase-producing and, if so, the specific carbapenemase produced is important in guiding treatment decisions.

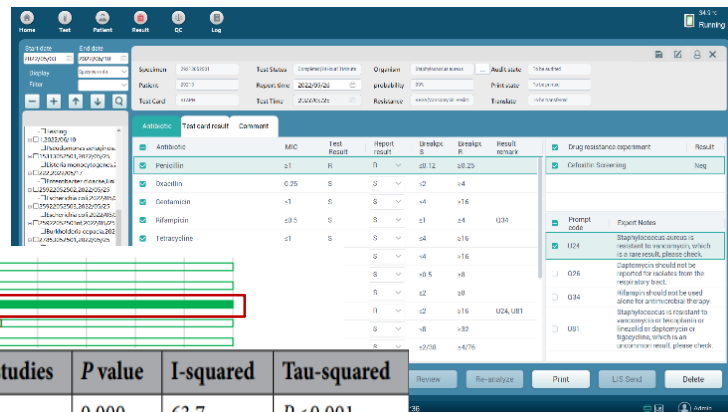
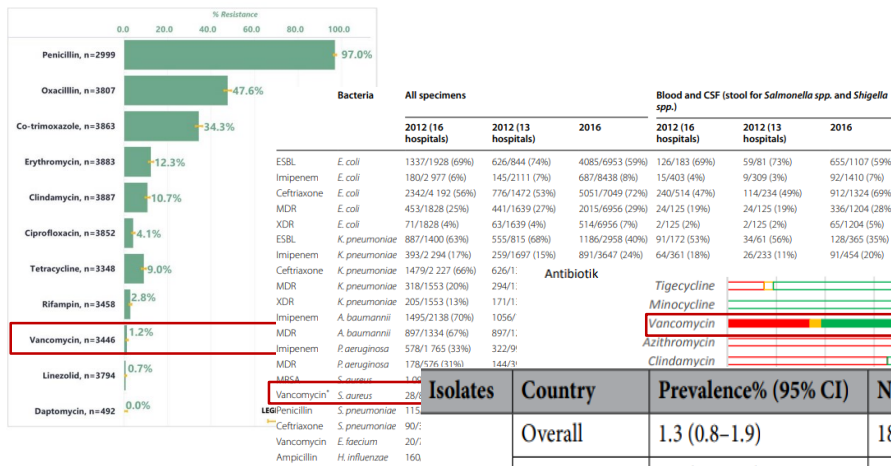
分析后：专家系统助力规范化报告实验结果 1

Post-Analytic : AST expert system assist reasonable AST report 1

- 业内唯一分析提示罕见耐药信息，帮助实验室发出更合理的药敏报告

The unique AST expert system indicates rare antimicrobial resistance, conflict antimicrobial susceptibility results and other information, help laboratories to issue more reasonable antimicrobial susceptibility reports

- Laboratory challenge of Vancomycin-resistant Staphylococcus aureus(VRSA)
万古霉素耐药的金黄色葡萄球菌的实验室挑战



分析后：专家系统助力规范化报告实验结果 2

Post-Analytic : AST expert system assist reasonable AST report 2

- **业内唯一分析提示矛盾耐药信息**，帮助实验室发出更合理的药敏报告

The unique AST expert system indicates rare antimicrobial resistance, conflict antimicrobial susceptibility results and other information, help laboratories to issue more reasonable antimicrobial susceptibility reports

- **Laboratory challenge of (Ciprofloxacin R/Levofloxacin S) *Pseudomonas aeruginosa***
环丙沙星耐药/左氧氟沙星敏感的铜绿假单胞菌实验室判读挑战

Journal of Antimicrobial Chemotherapy (2005) 55, 535–541
doi:10.1093/jac/dk026
Advance Access publication 22 February 2005

JAC

Fluoroquinolone-resistant *Pseudomonas aeruginosa*: risk factors for acquisition and impact on outcomes

Resistance included strains with intermediate susceptibility. Specifically, FQ-R included strains with ciprofloxacin MIC ≥ 2 mg/L and levofloxacin MIC ≥ 4 mg/L. Ciprofloxacin was used as a marker for susceptibility for all FQ antibiotics since cross-resistance between ciprofloxacin and levofloxacin was demonstrated for all strains.

Antibiotic	Test card result	MIC	Test Result	Report result	Breakpc S	Breakpc R	Result remark	Prompt code	Expert Notes
Gentamicin		≥ 16	R	R	≤ 4	≥ 16		U77	<i>Pseudomonas aeruginosa</i> is susceptible to levofloxacin and resistant to ciprofloxacin, which is an uncommon result, please check.
Tobramycin		≤ 4	S	S	≤ 4	≥ 16			
Amikacin		≤ 4	S	S	≤ 16	≥ 64		Q59	Interpretive criteria is adapted from cefoperazone breakpoint.
Tetracycline		≤ 1	*	*				Q60	Interpretive criteria is adapted from EUCAST breakpoint.
Minocycline		≤ 4	*	*				U02	Enterobacter or <i>Pseudomonas aeruginosa</i> or <i>Acinetobacter baumannii</i> is resistant to colistin or polymyxin B, which is an uncommon result, please check.
Tigecycline		4	*	*				U38	<i>Pseudomonas aeruginosa</i> is resistant to colistin or polymyxin B, which is a rare result, please check.
Chloramphenicol		≤ 8	*	*					
Trimethoprim-sulfamethoxazole		$\leq 0.5/9.5$	*	*					
Ciprofloxacin		2	R	R	≤ 0.5	≥ 2	U77		
Levofloxacin		≤ 0.06	S	S	≤ 1	≥ 4	U77		
Colistin		8	R	R	≤ 2	≥ 4	Q60, U02, ...		

分析后：专家系统提供更多诊疗信息助力临床沟通

Post-Analytic : AST expert system provide more therapeutic information for clinic communication

- 收集多份IDSA/ESCMID等权威指南治疗信息，为多重耐药菌株/少见菌的诊疗提供实验室建议
Provide laboratory suggestions to infections attributed to Multidrug resistance(MDR) bacteria and rare bacteria from multiply clinical practice guideline.
- Treatment challenge of Vancomycin-resistance Enterococcus (VRE)
万古霉素耐药的肠球菌治疗挑战

Treatment of enterococcal infections

Authors: Barb. Policy
Section Editor:
Deputy Editor:

Clinical Guideline

Management of Patients with Vancomycin-resistant Enterococci (VRE) Clinical Guideline

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Vancomycin-Resistant Enterococcus Treatment Guidance

The screenshot displays the AST expert system interface. At the top, there are navigation tabs: Home, Test, Patient, Result, QC, and Log. Below these, there are fields for Patient ID (103205663), Test Date (2022/06/10), and Test Time (17:47). The main area is divided into several sections:

- Specimen:** 103205663, Test Status: Completed, Probability: 100%
- Organism:** Enterococcus faecalis
- Test Card:** 775 AST, Test Time: 2022/06/10, Resistance: VRE/Enterococcus faecalis
- Antibiotic Test Card Result Table:**

Antibiotic	MIC	Test Result	Report Result	Breakpoint S	Breakpoint R	Result remark
Penicillin	1	S	S	≤8	≥16	
Ampicillin	0.5	S	S	≤8	≥16	
Cefuroxime	≥8	+	+			
Ceftriaxone	≥8	+	+			
Cefazolin	≥8	+	+			
Cefepime	≥8	+	+			
Moropenem	4	+	+			
Amoxicillin-Clavulanate	≤17	+	+			
Ritampirin	≥4	R	R	≤4	≥4	0.55
Tetracycline	≥32	R	R	≤4	≥16	
Daptomycin	2	I	I	≤0.5	≥8	
- Drug resistance experiment:**

Drug	Resistance	Result
β-Lactamase		Neg
High-level Aminoglycoside Resistance		Neg
- Expert Notes:**

The MIC of Ampicillin shall be calculated in Vancomycin-resistant isolates from complicated Urine tract infections patients. A combination of ampicillin and gentamicin intravenous is preferred drug to Ampicillin-susceptible isolates (MIC=0.5g/ml). Daptomycin is preferred drug to Ampicillin-resistant isolates (MIC=0.5g/ml). alternatives include Linezolid and Chaperomycin. Treat bacteremic VRE UTIs and pyelonephritis with 10-14 days.

AF-300/600 系统提供智能化的检测流程

AF-300/600 Provide a SMART workflow for routines testing

- **分析前：AP-100 精准封闭加样，提升效率，降低生物风险**
Pre-Analytic : AP-100 enable closed precisely dosing empower efficiency and decrease of risk
- **分析中：实验卡批量归集，简化客户的操作流程**
Analytic : optimized unload procedure by auto dispatch testing cards

主要解决什实验室的痛点？

How can we help handle sore points from laboratories?

- 减少对经验依赖 Reduce empirical work
 - 提升报告周转效率 Improve TAT



1. AF-300全自动鉴定药敏系统产品方案介绍

2. AF-300场景营销方案介绍

AF-300 marketing strategy introduction

围绕“全球抗菌药物管理(AMS)与抗生素耐药(AMR)”的公卫问题展开

Public health issues revolving around the Global Antimicrobial Administration (AMS) and Antibiotic Resistance (AMR).

- **Product: Introduction to competitors**
- **Promotion: Scenario promotion + EDM+ Media promotion + AMR surveillance**
- **IVD cross-line work**

竞品分析

Product Analysis :

Biomerieux Vitek®

- An industry leader in ID/AST market, more than 60% marketing share
- Numbers of global installation exceed 20,000 units
- Provide separate ID and AST reagent

Vitek 2 compact 15/30/60



Vitek 2 (60, 120)



Reagent



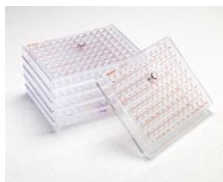
Danaher Walkaway®

- Numbers of global installation exceed 5,000 units
- Provide combo ID/AST reagent; ID only reagent; AST only reagent

Walkaway 96



Walkaway Panels



BD Phoenix®

- Numbers of global installation exceed 3,000 units
- Provide combo ID/AST reagent; ID only reagent; AST only reagent

Phoenix 100



Phoenix M50



BD GN ID/AST Card



竞品分析

Product Analysis :

竞品 Competitors	重要抱怨 Product main complaints	Mindray应对 Solution of Mindray
BMX Vitek compact	<ul style="list-style-type: none">• Saline Cross-contamination• NO Hemophilus/Neisseria AST solution	<ul style="list-style-type: none">• Separated Panels• Provide BMD-based Fastidious ID/AST solutions
BD Phoenix M50	<ul style="list-style-type: none">• Extra ID/AST broth and indicator• Auxiliary reagents have a short opening period• NO Hemophilus/Neisseria and Yeast AST solution	<ul style="list-style-type: none">• No additional reagents• 12 months period of all reagent• Provide BMD-based Fastidious and Yeast-like fungi ID/AST solutions
BCI Walkaway 96	<ul style="list-style-type: none">• Diversified Auxiliary reagents (10+)• Concentration of AST is Unable to include S/I/R latest breakpoints• NO Hemophilus/Neisseria and Yeast AST solution	<ul style="list-style-type: none">• No additional reagents• All antimicrobials concentration include S/I/R breakpoints from CLSI 2022• Provide BMD-based Fastidious and Yeast-like fungi ID/AST solutions

场景营销关键词：替换、补充和合作

Key words of scenario promotion: Replacement, Supplement and cooperation

1. 替换：手工法，BCI Autoscan客户

Replacement: Manual work and BCI Autoscan end-user

2. 补充：真菌、流感/奈瑟板卡作为BMX/BCI/BD, 以及部分MALDI-TOF MS客户的补充方案

Supplement: Yeast-like, Haemophilus/Neisseria ID/AST acted as a supplement to Vitek/Walkaway/Phoenix and parts of MALDI-TOF MS end-users

3. 合作：Demo性能评估；真菌ECV研究；MDR GN对多黏菌素的敏感性研究

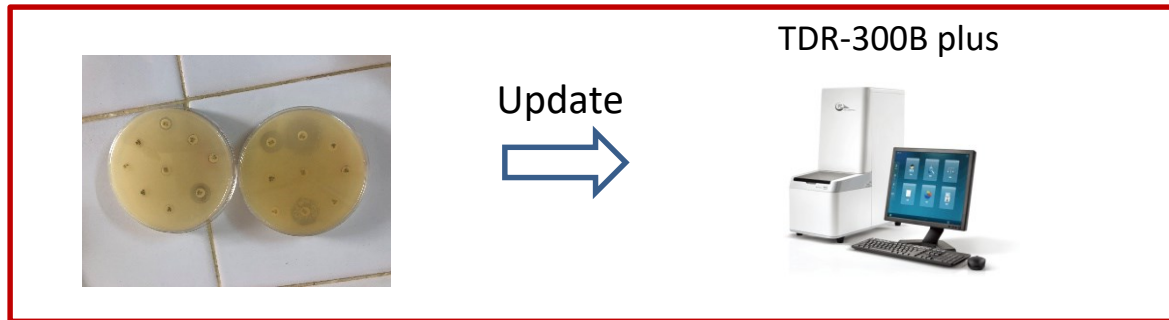
Scholar cooperation: Performance evaluation of Demo; Epidemiology MIC research to Yeast-like Fungi; Susceptibility testing analysis to Colistin among Multidrug-resistant Gram Negative Rods

场景营销关键词：替换

Key words of scenario promotion: Replacement

1. 替换：半自动升级手工，全自动升级半自动

Replacement: Manual work updated by TDR-300B plus and BCI Autoscan/ Biomerieux ATB (semi-automated) updated by AF-300



Update
→

AF-300



邀请客户加入本地抗菌药物耐药防控计划和组织

Invite more end-user to join national and regional surveillance plan and project

- Compared to other LMIC, Numbers of hospitals involved in National AMR South Asia / Sub-Sahara Africa is too limited; Quality of data monitored shall be improved as well
- Shall be more tertiary and secondary hospitals to join in.
- Mindray will provide a serial education on-line work to improve both

Table 1 Selected countries AMR National Surveillance Programs

Countries	Bangladesh	Brazil	India	Lebanon	Malaysia	South Africa	Ukraine
Population*	163.05 million	211.05 million	1.37 billion	6.86 million	31.95 million	58.56 million	41.98 million
World bank country classification by income(s)	LMIC	LMIC	LMIC	UMIC	UMIC	UMIC	LMIC
GLASS-AMR ^a	Yes	Yes	Yes	Yes	Yes	yes	No
National action plan ^b	In place	In place	In place	In place	In place	In place	Developed ^b
National coordinating center ^c	Established	Established	Established	Established	Established	Established	
Number of enrolled national surveillance centers ^d	8	18	130	30	110	353	
Number of enrolled hospitals	0	11	65	30	42	350	
In patient/ Outpatient facilities ^e	8 Inpatient/ Outpatient facilities	7 outpatient facilities	65 outpatient facilities	0	68 outpatient facilities	3 outpatient facilities	Tertiary care hospitals ^b
AST Standard ^d	CLSI	EUCAST/CLSI	CLSI	EUCAST/CLSI	EUCAST/CLSI	EUCAST/CLSI	EUCAST ^b
National Reference Laboratory ^e	Established	Established	Established	Established	Established	Established	In progress ^b
EQA	Provided	Provided	Not provided	Not reported	Provided	Provided	Provided ^b
Number of laboratories performing AST ^f	8	11	41	30	43	50	5 ^b
AST provided for GLASS pathogens	Some pathogens		Some pathogens	Some pathogens	All pathogens	All pathogens	All pathogens for CAESAR ^b
EQA provided for bacterial identification	Some labs	Not provided	All labs	Some labs	All labs	All labs	All labs ^b

AMR, Antimicrobial Resistance; CLSI, Clinical and Laboratory Standard Institute; EUCAST, European Committee on Antimicrobial Susceptibility Testing; GLASS, Global Antimicrobial Resistance Surveillance System; EQA, External Quality Assessment

* World Health Organization, Global antimicrobial resistance surveillance system (GLASS) report- early implementation 2020

^b World Health Organization, Central Asian and Eastern European Surveillance of Antimicrobial Resistance: Annual report 2019

Table 4 Percentage of countries who scored 1–5 for each category

Score	National Action Plan	AMR Surveillance	Infection Prevention and Control	Antimicrobial Stewardship
1	73%	77%	57%	82%
2	14%	16%	20%	14%
3	11%	5%	20%	5%
4	2%	2%	0%	0%
5	0%	0%	2%	0%
Mean score	1.43	1.32	1.70	1.23
P value	$p = 0.0207$			

A score of 1 indicates no capacity, 2 indicates limited capacity, 3 indicates developed capacity, 4 indicates demonstrated capacity and 5 indicates sustainable capacity. The majority of countries scored 1 in each AMR category.

关键信息推送：EDM + 媒介推广

Timely key message share : EDM + Medium promotion

1. To end-users: Monthly, updated of CLSI/Eucast and IDSA/ESCMID and other information, Via email and Teams or ZOOM

EDM » To end-user via email and Teams

时间/time	目的/Purpose	内容/Content
Sep, 2022	Improve quality of data surveillance 1	WHONET training 1
October, 2022	Improve quality of data surveillance 2	WHONET training 2
Nov, 2022	Improve quality of AST report 1	AST report review 1
Dec, 2022	Improve quality of AST report 2	AST report review 2
Jan, 2023	Eucast update	Eucast updated 2023

2. Preparation and share booklet and other MKT material

- 1) Manual of microbiology specimen collections (Oct, 2022)
- 2) Operation of blood culture and result analysis (Dec, 2022)
- 3) MIC result analysis (Feb, 2023)

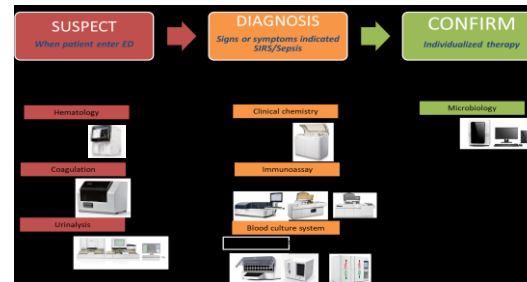
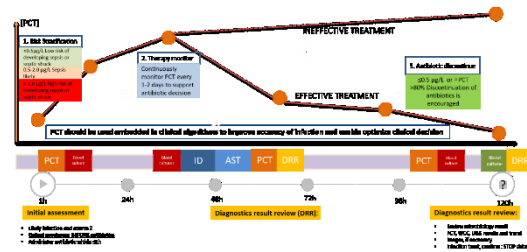
以感染性疾病为重点的IVD整合推广

IVD Cross-line activity focus on infectious disease

脓毒症管理:

Management of sepsis

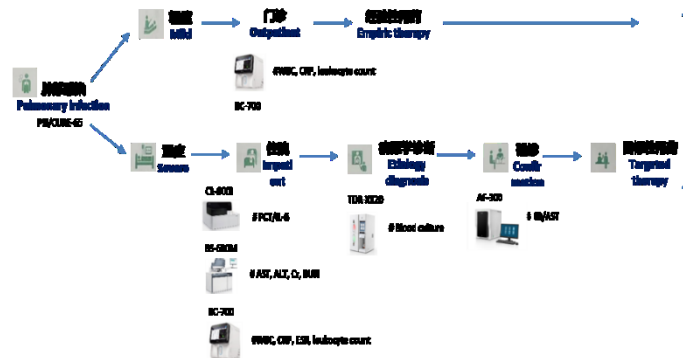
- 每年9月份脓毒症日宣传 Sepsis Day in Sep. each year
- 重点联动免疫参数PCT/IL-6/.... Cross-line with Immunology inflammatory parameter
- 标准化实验室构建 build up standardize laboratory



感染性疾病的诊疗

Diagnosis of infectious disease

- 医学周, 配合每年11月WHO的抗菌药物宣传周
Medical week, cooperated with Cooperate with WHO's Antimicrobial Awareness Week in November each year



Microbiology MKT strategy in ROW and EU market

1. Association cooperation:

a. Target: Microbiology & Immunology or Eucast

Personnel: Chairman or Microbiologist with influential titles of Senior and Professor in the association (selected by KOLs)

Purpose: platform, cheering for Mindray exhibition (brand image endorsement)

b. Set up a series of courses to guide customers with credits

2. laboratory standardization

I: Mindray IVD equipment closed

II : Combining hematology, immunology, etc., launched Mindray products' sepsis and anti-infection diagnosis and treatment roadmap, and invited the laboratory Clinical Pathologist to preach

3. In-Hospital Activities

I: Medical Week activities, twice a year, Management sepsis in the first half, AMR control in the second half

II: Assisting Clinical microbiologist in reporting and rectifying AMR data, analyzing the clinical, sensory control and pharmaceutical significance of AMR data changes

4. Collaborate with clients

a. Assist clients to complete a certain clinical performance study of the product, such as epidemiological screening of local fungal ECV

b. Form an AF-300 user club to regularly share progress in infectious diseases and microbiology

c. Invite customers to join Labclub, discuss guide updates, etc.

Roadmap

路线图

1. AF-300全自动鉴定药敏系统产品方案介绍

AF-300 Automated microorganisms analysis system introduction

- 消费者群体分析 Customer analysis
- 微生物实验的操作流程 Workflow in clinical microbiology lab
- 产品介绍 Product introduction

2. AF-300营销方案介绍

AF-300 marketing strategy introduction

3. 总结

Conclusion

AF-300/600: 一个可信赖的鉴定药敏解决方案

Mindray AF-300/600: A reliable microbe ID/AST solution

ACE (Homophonic: ACS)

- **精准：确保结果可靠 260min**
Accurate: enable a reliable ID/AST result

阵列传感+AI算法

Multiwavelength array sensor + AI growth Predict

- **全面：服务临床抗感染 10+15**
Comprehensive: serve for clinic antimicrobial treatment

卡全，药多，浓度广

All-inclusive ID/AST reagent, A whole panoply of Antibiotic and A wide range of MIC

- **智能：缩短TAT 44h**
Smart: Decease TAT
智能辅助专家系统 AI expert system



迈瑞的愿景和使命

Mission and vision of Mindray

愿景 Vision

成为守护人类健康的核心力量。

Better healthcare for all.

使命 Mission

普及高端科技，让更多人分享优质生命关怀。

Advance medical technologies to make healthcare more accessible.

谢谢！



mindray 迈瑞

生命科技如此亲近

Supplement: Frequent Asked question and Answer

补充常见问题回答

1. Why Mindray did not provide ESBLs in Gram-negative panels?

为什么迈瑞在阴性菌板卡测试中没有ESBL检测

1) Revised Breakpoints for cephaloridine and aztreonam is NO LONGER necessary according to ESBLs testing result; Testing ESBLs will be on epidemiological or infection prevention purposes

(23) Following evaluation of PK/PD properties, limited clinical data, and MIC distributions, revised breakpoints for cephalosporins (cefazolin, cefotaxime, ceftazidime, ceftizoxime, and ceftriaxone) and aztreonam were first published in January 2010 (M100-S20) and are listed in this table. Cefuroxime (parenteral) was also evaluated; however, no change in breakpoints was necessary for the dosage indicated below. When using the current breakpoints, routine ESBL testing is no longer necessary before reporting results (ie, it is no longer necessary to edit results for cephalosporins, aztreonam, or penicillins from susceptible to resistant). However, ESBL testing may still be useful for epidemiological or infection prevention purposes. For laboratories that have not implemented the current breakpoints, ESBL testing should be performed as described in Table 3A.

2) ESBLs will be replaced by a new phenotype called “Extended-spectrum cephalosporin-resistant” Eco/Kpn/Kox in 2022 US CDC definition

Phenotype Name	Phenotype Code	Phenotype Definition
Extended-spectrum cephalosporin-resistant <i>E. coli</i>	ESCecli_HAI	Any <i>Escherichia coli</i> that has tested Intermediate (I) or Resistant (R) to at least 1 of the following: cefepime, ceftriaxone, cefotaxime, ceftazidime, ceftolozane/tazobactam, or ceftazidime/avibactam. *NOTE: For data prior to 2021, ceftolozane/tazobactam and ceftazidime/avibactam are not included in the ESC definition, as results for these drugs were not collected in NHSN.

Frequent Asked question and Answer

常见问题回答

2. Why Mindray did not provide Fosfomycin in Gram-negative panels?

为什么迈瑞在阴性菌板卡测试中没有磷霉素检测?

- Broth dilution MIC testing for Fosfomycin is not recommended for Eucast and CLSI
- RUO purposes only in BCI, BD and BMX card, not practice in clinical report

FOSFOMYCINS											
U	Fosfomycin	200 µg	≥16	-	13-15	≤12	≤64	-	128	≥256	(68) Disk diffusion and MIC breakpoints apply only to <i>E. coli</i> urinary tract isolates and should not be extrapolated to other species of Enterobacterales. (69) The 200-µg fosfomycin disk contains 50 µg of glucose-6-phosphate. (70) The only approved MIC method for testing is agar dilution using agar media supplemented with 25 µg/mL of glucose-6-phosphate. Broth dilution MIC testing should not be performed.

Supplement: Frequent Asked question and Answer

补充常见问题回答

3. Why Mindray did not provide imipenem in Gram-negative panels? 为什么迈瑞在阴性菌板卡测试中没有提供亚胺培南的检测?

For Enterobacteria:

- Meropenem is the recommend substrate to screen carbapenemase by Eucast (ECV) and CLSI (CIM test) in term of its sensitivity and specificity
- PK-PD model suggest optimal dosing regimens shall be based on MIC testing
- Imipenem is on the way